Software Projects and Innovations

Tariscope 4.6

Administrator's Guide

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Contents

Purpose

This document provides administrator guidance for how to set up, configure and maintain the **Tariscope Enterprise 4.6** or **Tariscope Provider 4.6** editions (SoftPI) or above. Further in the text, if there is not needed to clarify the edition, the **Tariscope** name is used.

Introduction

Tariscope Enterprise 4.6 is a call accounting software that is intended for companies which use telephone systems (PBXs) and Internet equipment for internal needs.

Tariscope Provider 4.6 is a telecommunications billing system that is intended for telecommunications service providers.

The Tariscope is a Web application.

Tariscope administrator must be an experienced user of the operating system Windows 10 or Windows Server 2019 / 2016 or Linux depending on which operation system is used and have a basic level of knowledge in Microsoft SQL Server.

Tariscope is a web application of the Tariscope system, which can be used both to configure the system and to work with it. This document discusses how to set up and maintain Tariscope.

Chapter 1 Installation

Advance preparation

Tariscope can be installed both on Windows (Windows 10, Windows Server 2019 / 2016) and Linux (Alpine, CentOS, Debian, Fedora, OpenSUSE, Red Hat, SLES, Ubuntu).

Before the Tariscope installation, perform the following steps:

- Determine under which operating systems the individual components of the Tariscope system will work. It is possible to install individual components on servers (computers) with different operating systems. For example, Microsoft SQL Server is installed on Windows, and Tariscope on Linux. Other installation options are also possible.
- Determine the Microsoft SQL edition you will use for the Tariscope database. Whether it will be installed from the installation package on the same computer where Tariscope will be installed, or the SQL server will be installed on a separate server.
- Select an option to install the system.
- Select a server (computer), you will install the system. Server parameters for the Tariscope system depend on the selected installation option, telephone traffic, activity with the Tariscope system. When placing the Tariscope system and MS SQL server on one server, as well as low telephone traffic, we can recommend the following **minimum server parameters**:
  Processor: AMD FX-6300 or Intel Core i5-4430 or server AMD Opteron 3380 or Intel Xeon E3-1505L v5;
  RAM: 8 GB;
  Hard disk: 512 GB.

Additional dependencies

For Windows

The Tariscope distribution includes Microsoft SQL Server 2017 Express. This is a free edition, but it has several limitations, primarily related to the size of the database and performance. It is not required to install this server, but in this case, you should connect the Tariscope database to Microsoft SQL server of a different version and edition, which you already have, or purchase a new one. Microsoft SQL Server 2019 and 2017 are supported.

For Linux

Before installing the Tariscope system, you must install the following applications:

- cupid,
- inxi,

- libgdiplus,
- wkhtmltopdf,
- .Net Core Runtime 5.0. How to install this application for a specific Linux version, see the Microsoft website: https://docs.microsoft.com/en-us/dotnet/core/install/linux

Installation for Linux, unlike installation for Windows, does not contain Microsoft SQL Server installation. Therefore, you must install this server yourself, either under Windows or under Linux. How to install this server under Linux, see the Microsoft website: https://docs.microsoft.com/en-us/sql/linux/sql-server-linux-setup?view=sql-server-ver15

1.1 Installation for Windows

The Tariscope system has a single installation package to setup the **Tariscope server**, **Tariscope database**, and **Microsoft SQL Server 2017 Express edition**.

The Tariscope server executes general functions of the system.

The Tariscope is a Web application that is used to setup Tariscope parameters and to work with calls, services, customers' accounts and other information. It is a main application of the Tariscope system with which the user works.

The installation is contained in the file of **tariscope46.exe**, which you can download from the Tariscope site.

Run the file. The **Installer Language** window appears as shown in Figure 1.1.1.

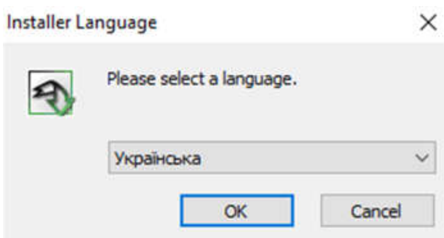


Figure 1.1.1

Select the desired language and click **OK**. The installation window appears as shown in Figure 1.1.2.

This is an information window. Read information and click **Next**. The **License Agreement** window appears as shown in Figure 1.1.3.

Read the Agreement. If you agree with the agreement, click **I Agree**, otherwise click **Cancel**. If you have selected the **I Agree** button on the previous step of installation, the installation window looks as shown in Figure 1.1.4.

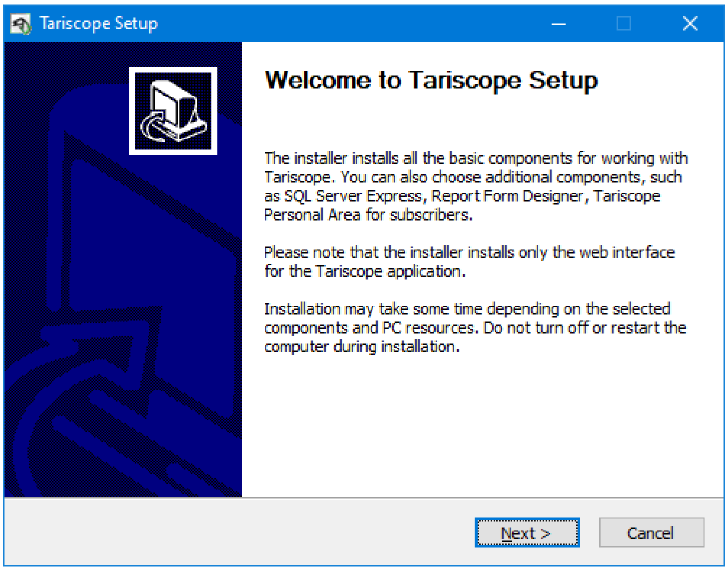


Figure 1.1.2

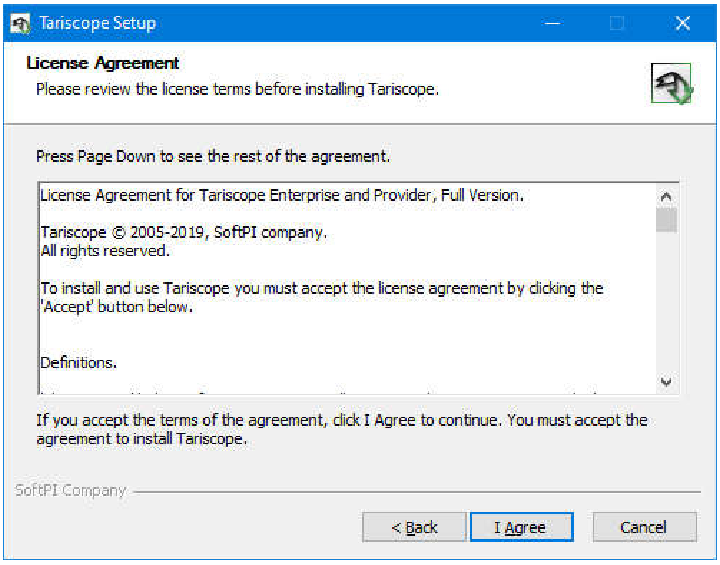


Figure 1.1.3

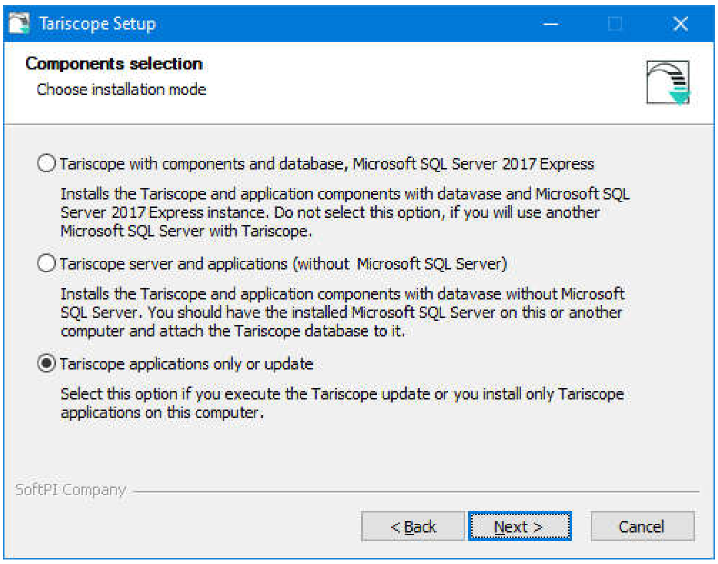


Figure 1.1.4

The **Components selection** window offer you to select an installation option. There are three options:

- **Tariscope with components and database, Microsoft SQL Server 2017 Express**.
  The choice of the option allows you to install all Tariscope applications, the Tariscope database and Microsoft SQL Server 2017 Express edition. If you planning to use another edition of Microsoft SQL Server, do not select this option.
- **Tariscope server and applications (without Microsoft SQL Server)**. The choice of the option allows you to install all Tariscope applications and the Tariscope database. Microsoft SQL Server does not install during the installation. The Tariscope database backup was made on the Microsoft SQL Server 2017, therefore, you should have this Microsoft SQL Server version or higher to attach the Tariscope database.
- **Tariscope applications only or update**.
  Select this option if you already installed the Tariscope. Also, you should select the option if you update the previously installed Tariscope applications.

Select the desired option and click **Next**. Whatever your choice is, the next installation window is as shown in Figure 1.1.5.

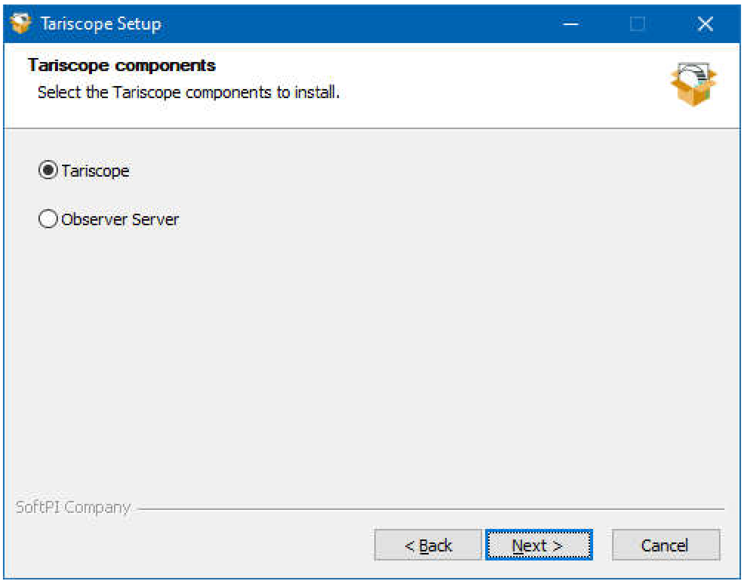


Figure 1.1.5

The **Tariscope components** windows allows you to select applications that you want to install. There are following applications:

- **Tariscope** is a Web application that provides the Tariscope configuration and work. You only need to install it on one server.
- **Observer Server** is a server of Tariscope Observer remote services. It should be installed on the remote computer that has access to calls from a telephone system.

Select the desired components and click **Next**. The next installation window appears as shown in Figure 1.1.6.

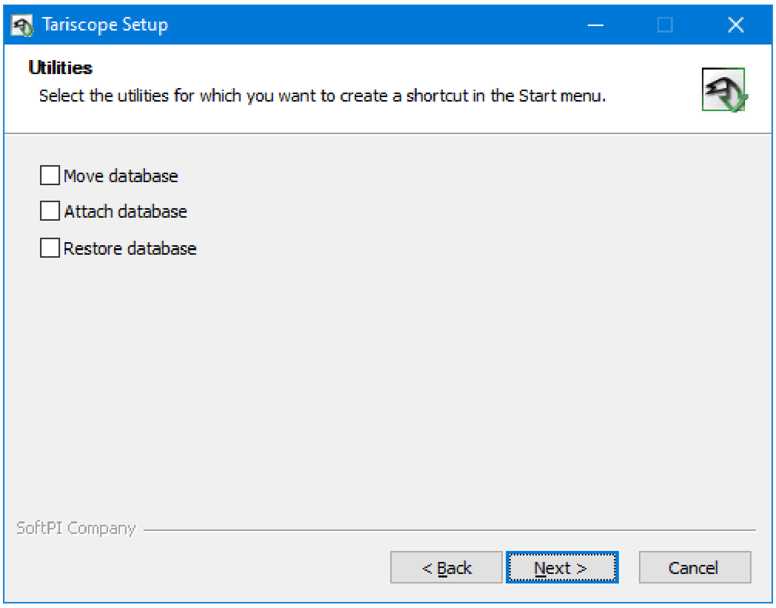


Figure 1.1.6

There are three Tariscope utilities for which you can create shortcuts in the **Start** menu of Windows.

The **Move database** utility allows you to move the Tariscope database from one folder to another.

The **Attach database** utility allows you to attach data files (MDF and LDF files) to the desired Microsoft SQL Server.

The **Restore database** utility allows you to restore the Tariscope database from the Tariscope database backup.

Select the desired check boxes and click **Next**. The installation window will be as shown in Figure 1.1.7.

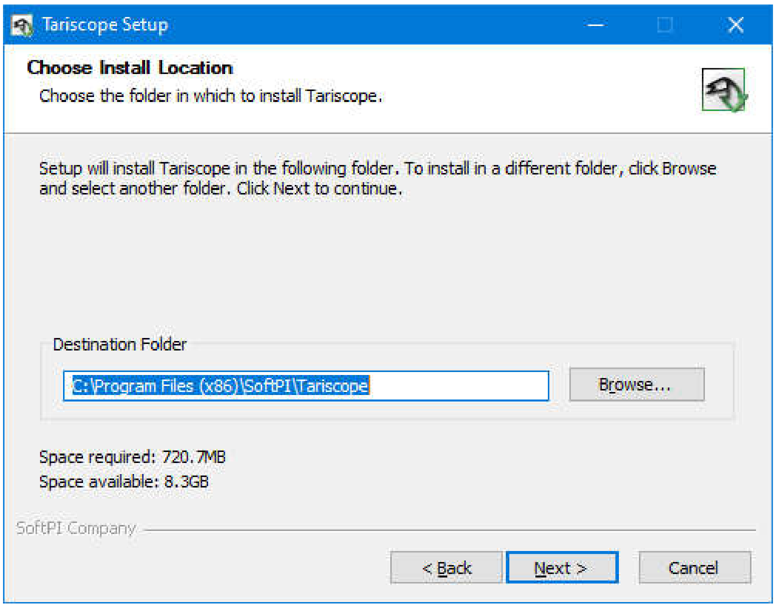


Figure 1.1.7

Enter or select the desired folder where Tariscope will be installed and click **Next**. The installation window will be as shown in Figure 1.1.8.

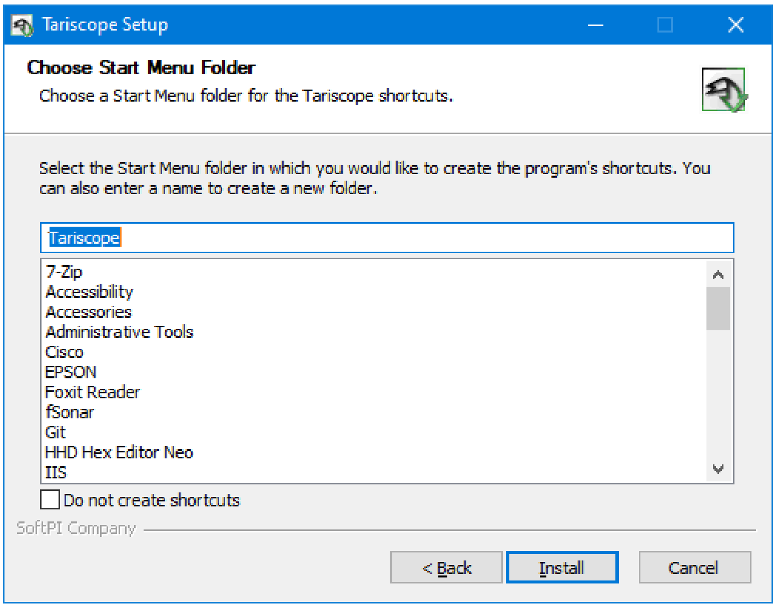


Figure 1.1.8

This window allows you to select a folder name in the **Start** menu of Windows. By default, the **Tariscope** name is offered. You can change it on another. Click **Install** to begin the installation. The Tariscope installation window will look like the one shown in Figure 1.1.9.

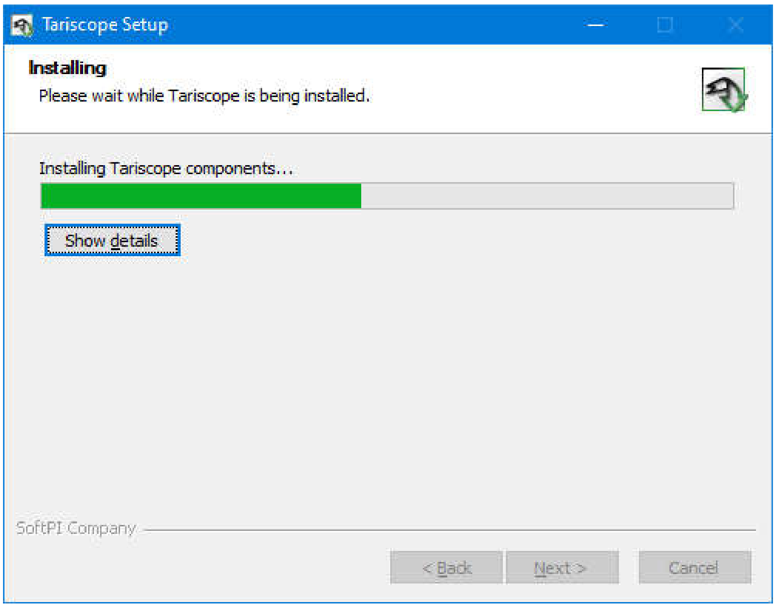


Figure 1.1.9

The applications that you selected on the installation step shown in Figure 1.1.3 are installed. After the installation of the Tariscope system is completed, the Tariscope Start window will appear, an example of which is shown in Figure 1.1.10.

You can change the language of the window. To do this, select on the toolbar: **Settings → Language**.

To enter the parameters for connecting the Tariscope system to Microsoft SQL Server, click the **Change connection options** link. The **SQL Server Connection** window appears, an example of which is shown in Figure 1.1.11.

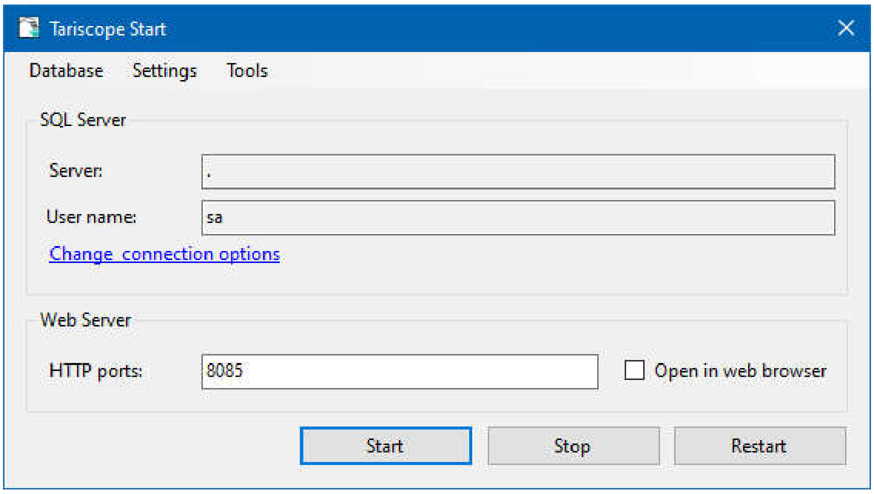


Figure 1.1.10

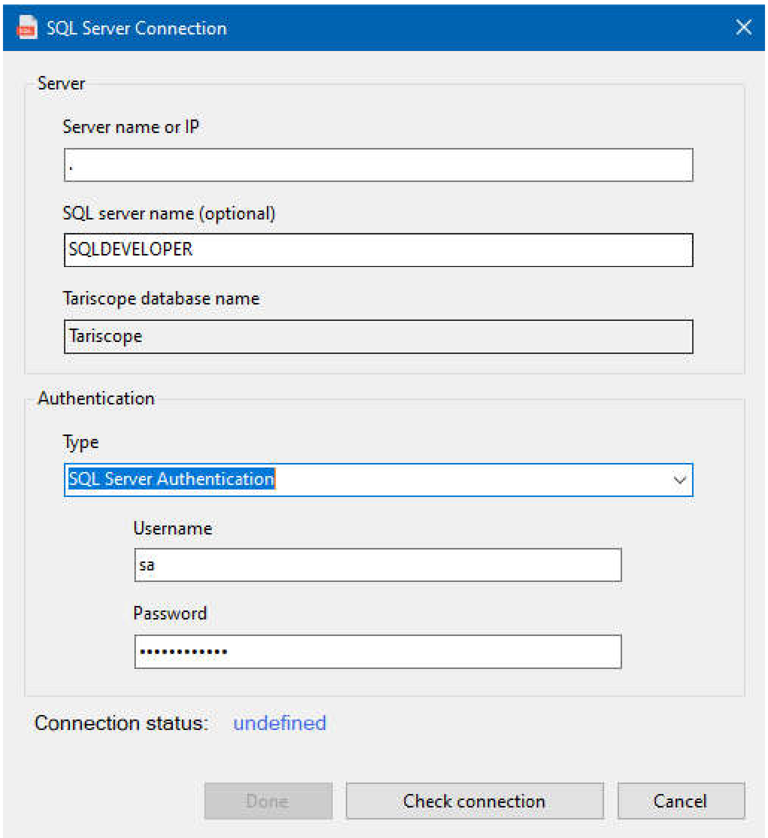


Figure 1.1.11

Specify the SQL server name or its IP address in the **Server name or IP** box. If Microsoft SQL Server that should be used for the Tariscope database is on another server, type IP address of the server.

If the SQL server instance name is not default one (MSSQLSERVER), you should specify its name in the **SQL server name (optional)** box. For example, the SQL Server name is MySQLServer. In this case, you should type: MySQLServer

If you are installing the SQL Server from the Tariscope installation package, you can type '.' ('dot' symbol) in the **SQL server name (optional)** box.

In the **Authentication** section, in the **Type** list, select the desired type of authentication. There are options:

- **Windows Authentication.**

- **SQL Server Authentication**.

If you select **Windows Authentication**, you do not need to enter any parameters. You can use this authentication type if you are installing Tariscope on the same server where SQL Server works.

For the second option, in the **Username** and **Password** boxes, type a username and password that are used to update the database on the SQL server.

We recommend using SQL Server Authentication.

If your SQL Server is located on another server, you should use only SQL Server Authentication.

If you use SQL Server that was installed from the Tariscope installation package, you can use both Windows Authentication and SQL Server Authentication. In the last case, you should use the username of '**sa**' and password of '**Tariscope123**'.

We strongly recommend changing the password when you begin to work with Tariscope.

Click **Check connection**.

If you correctly entered parameters, the **Connection status** string displays the value of "**connected**". Otherwise, check the set parameters.

Click **Done**, you will return to the **Tariscope Start** window.

In the **Port** box, you can specify the IP addresses that will be used to access the Tariscope application. Default value: 8085. You can change this value. If you want to open the application after installing it, select the **Open in web browser** check box.

If you want to use HTTPS and have a corresponding certificate, then to connect it, select in the menu: **Settings** → **HTTPS**. The **HTTPS setup** window appears, an example of which is shown in Figure 1.1.12.

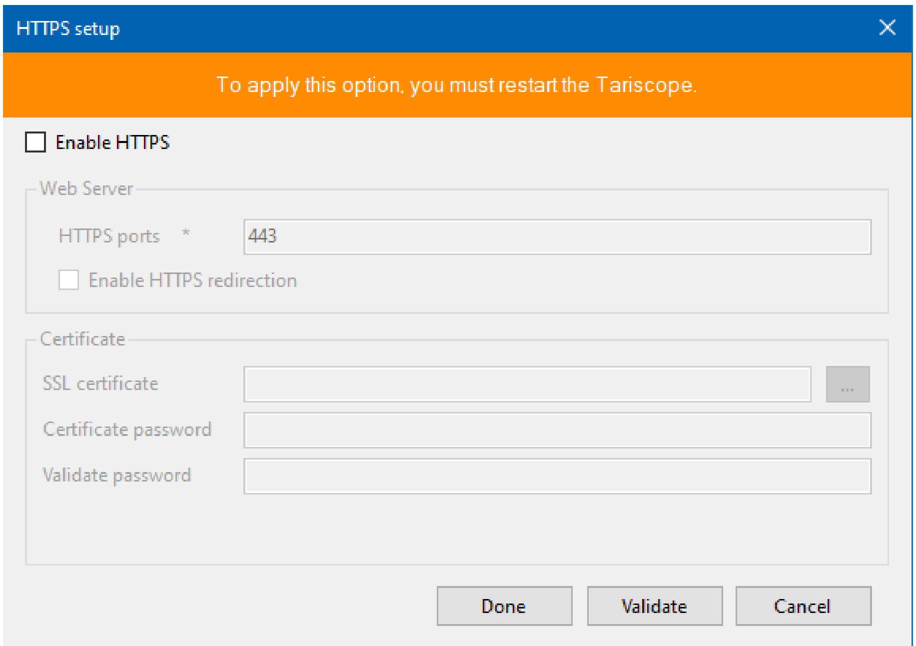


Figure 1.1.12

Select **Enable HTTPS**. The rest of the window positions become active.

In the **HTTPS ports** box, enter one or more IP ports on which Tariscope will work.

If you want all users who connect to Tariscope via an unprotected protocol to be redirected to a secure site, select **Enable HTTPS redirection**.

Click on the button to the left of the **SSL certificate** box and select the certificate file.

In the **Certificate password** box, enter the password for the certificate and repeat it in the **Validate password** box.

To check if the settings are correct, click the **Validate** button.

Click the **Done** button to complete the configuration.

The Tariscope website keeps a log of requests to it. You can set the period for creating such a new log. To do this, select in the Tariscope Start menu: **Settings → Kestrel Logger**. Kestrel is the name of the server that hosts the Tariscope website. The **Kestrel Logger** window appears, where in the **Period** list, select the required one and click **Apply**.

If you have used Tariscope versions 4.4 or lower before, and you want to transfer previously created views, select **Tools → Migrate the views** from the menu.

If you have used Tariscope versions 4.4 or lower before, and you want to transfer previously added telephone codes, select **Tools → Migrate the codes** in the menu.

To launch Tariscope, click the **Start** button. Tariscope installation will be completed.

1.2 Installation for Linux

Installation for Linux does not contain Microsoft SQL Server, which is needed for the Tariscope system to work. You must download it from Microsoft website and install it yourself. Microsoft SQL Server 2019 (2017) can be installed on both Linux and Windows.

Unpack the archive: **tariscope46.tar.gz**

As a result, the **App** and **Generic** folders will be created, and the **install-tariscope.sh** file will be in the root.

Run the following command with the **root** user rights to install the Tariscope system:

sh install-tariscope.sh - p *'name of the installation folder'*

In this command instead of *'name of the installation folder'*, specify, for example, '/home/softpi/tariscope’

If all the listed applications in the **Additional dependencies** section have been installed, then the Tariscope system installation should be completed without errors.

Go to the folder where you installed Tariscope. It should contain the **www** folder. The Tariscope database is in this folder **/www/Database/Database**. Install Microsoft SQL Server 2019 (2017) on this or another server and attach the specified database to it. How to install Microsoft SQL Server for Linux, see the article: https://docs.microsoft.com/en-us/sql/linux/sql-server-linux-setup?view=sql-server-ver15

How to install Microsoft SQL Server for Windows, see the article: https://docs.microsoft.com/ru-ru/sql/database-engine/install-windows/install-sql-server?view=sql-server-ver15

Go to the **www** folder and find **appsettings.json** file. Open it for editing. An example of this file is shown in Figure 1.2.1.

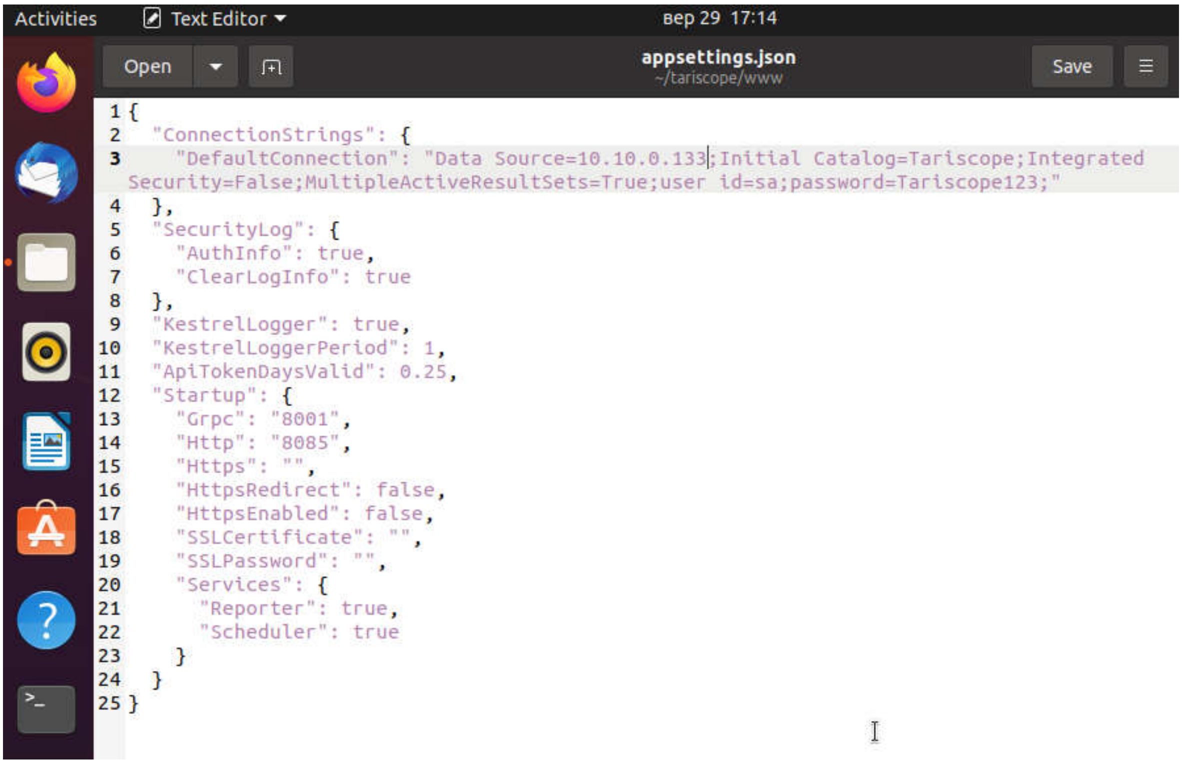


Figure 1.2.1

In the connection string (**DefaultConnection**) after **Data Source**, specify the IP address of the server where Microsoft SQL Server was installed. In the example in Figure 1.2.1, this is the IP address: 10.10.0.133. In the same line, the system administrator, "**sa**", with the password "**Tariscope123**" is specified as the user from whom the Tariscope system works. Instead of the "**sa**" user, you can use any other user who has all the rights (owner) to the Tariscope database.

Tariscope works on the Kestrel server. By default, this server keeps a log of requests to it. This is reflected in the line:

“KestrelLogger”: true

Change true to false to disable this logging. We recommend keeping this log.

The line **"KestrelLoggerPeriod": 1** defines the period for creating a new Kestrel log: 0 - daily, 1 - weekly, 2 - monthly. Change the period for creating the log if necessary.

The IP port on which Tariscope will work is specified in the line:

"Http": "8085"

That is, IP port of 8085 will be used by default. Change it if necessary.

If you want Tariscope to work over HTTPS, you must have an SSL certificate and set its parameters in this file.

In the line **"SSLCertificate": ""** specify the path where the file of this certificate is located.

In the line **"SSLPassword": ""** enter the password for this certificate.

Specify the IP port for working over HTTPS in the line:

"Https": ""

To enable HTTPS, change **false** to **true** in the line:

"HttpsEnabled": false

If you want to redirect all requests made in Tariscope via HTTP to HTTPS port, change the value **false** to **true** in the line:

"HttpsRedirect": false

Save the settings for this file.

In the **www** folder there is the **run.sh** file that starts the Tariscope server. Run the command as the root user:

sh run.sh

After that you can work with the Tariscope system.

Chapter 2 The first connection to Tariscope

To work with Tariscope, we recommend using the following browsers: Chrome (Google) or Edge (Microsoft.

Open a Web browser and enter IP address and IP port of Tariscope. If you are on the server where Tariscope was installed, you can enter **localhost:8085**, where 8085 is an IP port that you specified earlier. If you set another IP port, enter it instead of 8085.

If you connect from another computer, enter IP address of Tariscope server and IP port. For example: 10.10.5.19:8085

The first Tariscope page will look like the one shown in Figure 2.1.

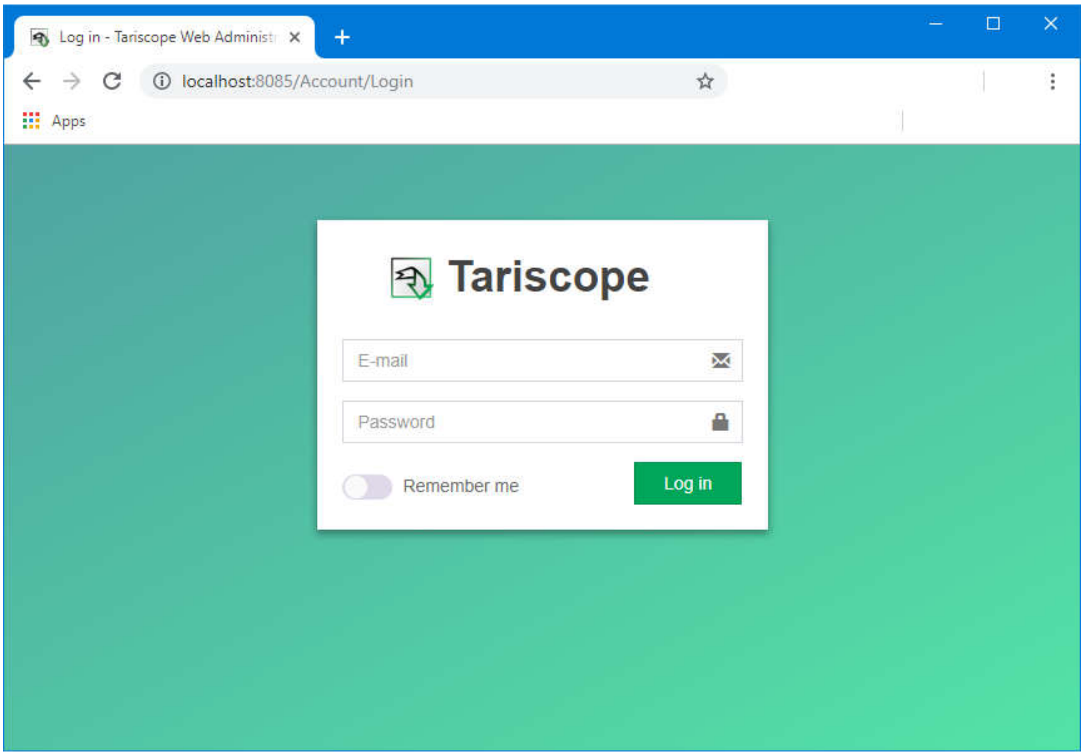


Figure 2.1

In the **E-mail** box, enter **webadmin@tariscope.com**. It is a default Tariscope administrator login.

In the **Password** box, enter **111111**. It is a default password.

<u>**You should to change the password to avoid unauthorized access to the application.**</u>

If you have correctly entered the login and password and if you use Chrome or Edge, the window appears as shown in Figure 2.2. The window offers you to use Progressive Web applications (PWA) to work with Tariscope. This means that Tariscope application will open in the separate window without the browser window. This allows you to better use screen. At the same time, you can work with Tariscope through browser. If you want to use PWA, click **Install** in the window and specify a folder where a shortcut will be created.

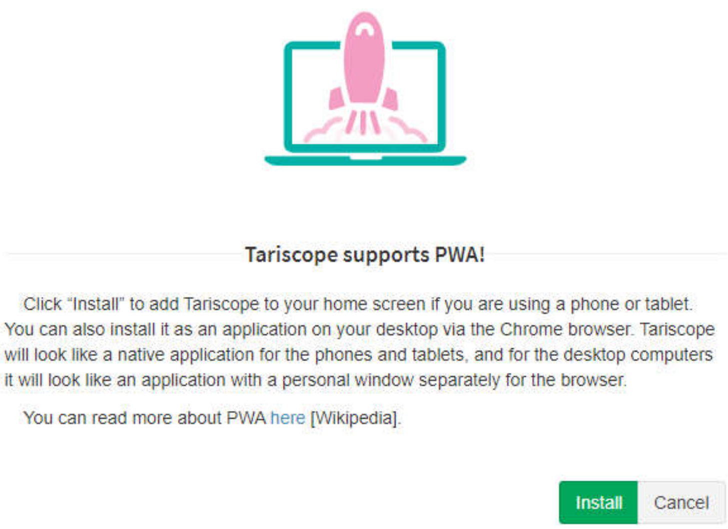


Figure 2.2

The application page will look like the one shown in Figure 2.3. The main Tariscope page displays the application menu, dashboard, username connected to Tariscope, and presence of requests from subscribers (customers). The menu is used both for the Tariscope configuration and for work.

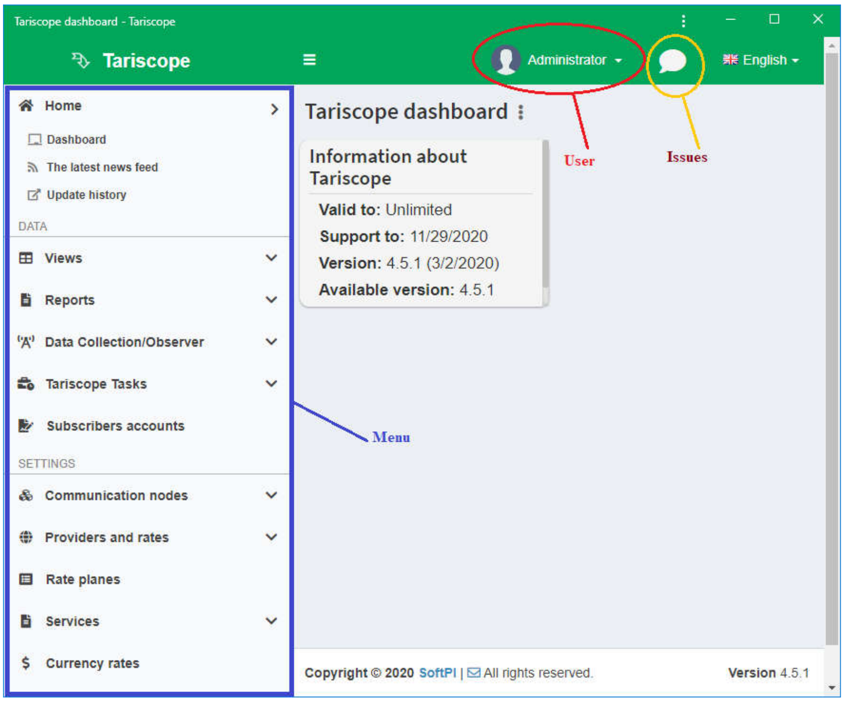


Figure 2.3

The menu contains the following items and subitems:

- **Home**. The item includes the following subitems:
  The **Dashboard** page can display different widgets that allows you to control and manage Tariscope.
  The **latest news feed** page displays announcements of the latest news from the Tariscope site.

The **Update history** item allows you to open the Tariscope Version History page on the Tariscope site. The page contains the Tariscope update history.

- **Views**. This item is intended to create, edit, and analyze views with calls, services or IP traffic information, processing CDR data and import of calls and services data from external files into Tariscope. Correspondingly, there are the following subitems:
  View list allows you to work with views of calls, services, and IP traffic.
  CDR processing allows you to process a CDR file from PBX. Use this function if you want to process a CDR file without using the Tariscope Observer service.
  Import calls and services allows to process some data, for example, CDR or services information if Tariscope does not contain a specific parser for your PBX or services. Before use the item, you should create the script that will execute these actions.
- **Reports**. The item allows you to generate a report. There are subitems:
  Report list displays a list of available reports.
  Service log is a log of the result of reporting.
- **Data Collection/Observer**. The item is used to configure and control the automated CDR data collection. There are subitems:
  Observer management allows you to open a page that contains brief information about all Observers.
  A list of the Tariscope Observer services.
- **Tariscope Tasks**. This item is used to configure tasks that are scheduled. There are following subitems:
  Task list contains a list of tasks that Tariscope Tasks must execute.
  Service log is a log of the Tariscope Tasks service.
- **Work order**. First of all, this item is intended for telecom operators who want to use Tariscope to form tasks for employees and monitor their implementation. There are the following subitems:
  Create order. It allows you to create a new work order.
  Order list. The item allows you to manage the work orders.
- **Smart Assistant**. It contains tools that use machine learning and artificial intelligence, which allows you to detect the fraud, execute call information monitoring, and predict subscribers' payments.
- **Subscribers' accounts**. The item is applied only for the Tariscope Provider edition. It allows you to work with subscribers' (customers') accounts.
- **Communication nodes**. The item is used to configure a communication node that includes PBXs' and subscribers' parameters. The item contains the subitems:
  Equipment creation wizard helps you to create a new communication node.
  Node management opens a page that contains brief information about all communication nodes.
  A list of communication nodes.
- **Providers and rates**. This item allows you to setup telecom provider settings which are applied to calculate the call costs. The item contains the following subitems:

Common phone codes allows you to manage telephone codes (country codes, area codes, mobile operator codes, and local codes) that can be applied by different telecom provides.
Providers management opens a page that contains a list of telecom providers. The page allows a user to view, edit, import, and export providers.
A list of telecom providers.

- **Rate plans**. The item is applied only for the Tariscope Provider edition. It allows you to manage rate plans.
- **Services**. The item is applied only for the Tariscope Provider edition. The item allows you to manage services provided to customers. The **Services** item includes the following subitems:
  Services list displays a page that contains a list of services. You can manage any of these services.
  Bundles list displays a page that contains a list of service bundles. You can manage any of these bundles.
  Taxes displays a list of taxes that are applied to services.
  Day types allows you to set days when services will have the specific price.
- **Currency rates**. The item allows you to manage currency settings.
- **Additional options**. The item contains a set of subitems that are enumerated below.

There are the following **Additional options**:

- **Users**. This item allows you to manage Tariscope users.
- **Personal Area**. The item allows you to manage parameters of Personal Area. Personal Area is an interface for subscribers to get information about their calls, status of account, to execute payments for telecom services and others.
- **Categories**. The item allows you to manage the call categories.
- **Service-rate**. The choice of the item allows you to manage service-rates. A service-rate means that a rate can be applied to the service. This provides using a single service name in different rate plans, but these services will have different rates.
- **Database info**. This item provides database information, database restoring, database moving, calls archiving, restoring, and removing. Also, the item provides a creation of Tariscope backup and recovering the Tariscope database from the backup.
- **Integrations**. The choice of the item opens the page of Tariscope integrations with other applications. This page contains the links to the following Tariscope applications:
  Tariscope API contains a short information about Tariscope API.
  SureTax provides configuration and getting taxes from SureTax (Wolters Kluwer).
  3CX Phone System provides working with the 3CX databases.
  Hotel systems. This item allows you to setup and manage the service that exports calls data in the hotel or other systems.
  Netflow/IPFIX/rFlow Collector. The item is used to configure and manage a collection of data about IP traffic with NetFlow, IPFIX or rFlow.

Active Directory provides a profile configuration to get subscribers information from Active Directory.
New integration opens windows with information that SoftPI are ready to develop any integration with your system.

- **_ SQL queries**. The choice of the item allows you to create a query to the Tariscope database. You should use T-SQL.
- **Service log**. The item displays the Tariscope log. You can use it to solve issues in Tariscope.
- **Notifications and mailing**. The item allows you to setup notifications and mailing in Tariscope.
- **Dictionaries**. This item allows you to manage dictionaries which are used in Tariscope.
- **Day with interruption** allows you to fix such day. This information will use to charge services to customers.
- **System variables**. The item provides a management of Tariscope system variables.
- **License**. Select the item if you want to get the activation key or have a look at the license conditions.
- **About**. This item allows to get the license information and warranty period, system requirements, SoftPI Support Team contacts, and links to different Tariscope sources.

Chapter 3 Activation

The Tariscope installation package contains a trial activation key for the Tariscope Provider edition. The key provides a support for 15 extensions (telephone numbers) or IP addresses and works for 15 days. The Tariscope Provider edition includes all features of the Tariscope Enterprise edition and some additional features.

If you purchased the Tariscope license, you should activate the license.

If you have not yet purchased Tariscope, but you want to try it with the desired number of subscribers (for the Tariscope Enterprise edition) or extensions and IP addresses (for the Tariscope Provider edition) for one month, you should create a test activation request and send one to the SoftPI Support Service.

To obtain the Tariscope activation key, in the menu, select **Additional options → License**.

The Tariscope page will look like the one shown in Figure 3.1.

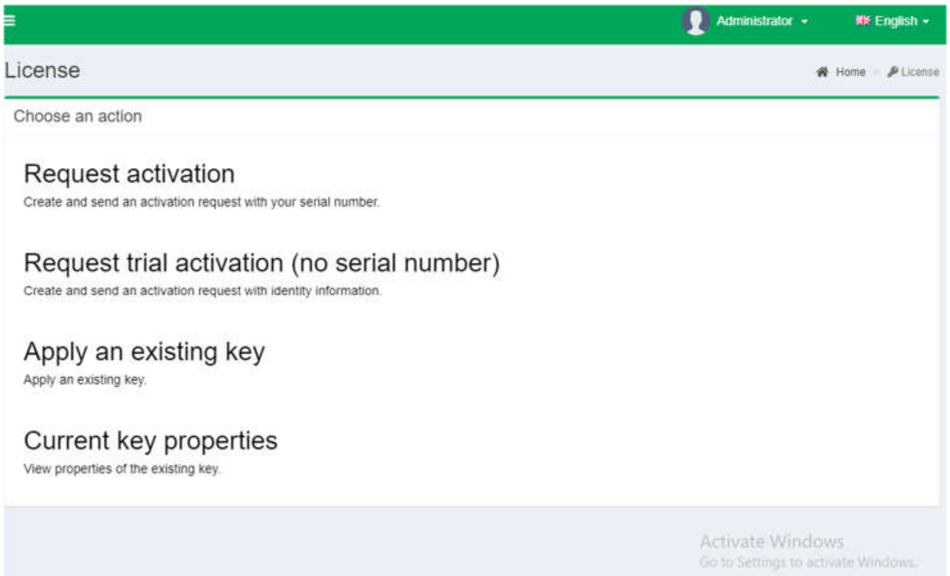


Figure 3.1

The Tariscope activation consists of the following steps:

1. Creating and sending an activation request file.
2. Applying the activation key.

If the computer with the Tariscope server has a connection to the Internet, sending a request, receiving, and applying an activation key are performed automatically by Tariscope. The automatic generation and applying the key are performed by the Tariscope Main service (Tariscope server).

In case the Tariscope server has no Internet connection, the Tariscope administrator should send the request and get the activation key himself by e-mail, and then apply it using the **License** page.

Activation request

If you purchased the Tariscope license, click on the **Request activation** in the page shown in Figure 3.1. The Tariscope page will be as shown in Figure 3.2.

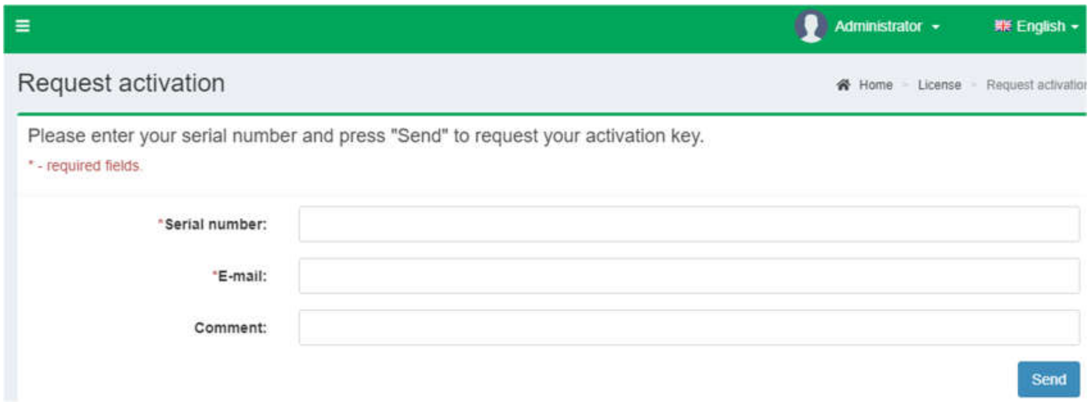


Figure 3.2

In the **Serial number** box, type the serial number of your license.

In the **E-mail** box, type your e-mail address. If there is no possibility to send the activation key directly to Tariscope, the key will be sent on your e-mail address.

If you wish to send any additional information to SoftPI, you can type it in the **Comment** box.

Click **Send**. The registration information will be sent to SoftPI if the server has a connection to the Internet.

If Tariscope determines that the Internet connection is not available, a message appears. It is shown in Figure 3.3.

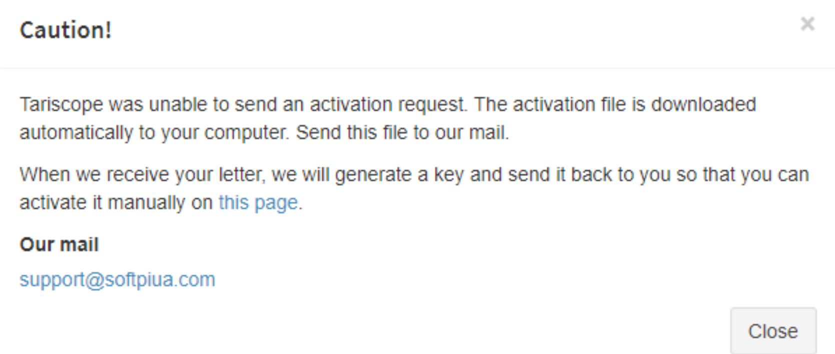


Figure 3.3

Click **Close**. In the **Open** window, select a folder to save the request file and save it.

Send this file to the email address: **support@softpiua.com**.

If you have not purchased Tariscope yet, but would like to test it in fully functional mode for one month, click on the **Request trial activation (no serial number)** (Figure 3.1). The page will be as shown in Figure 3.4.

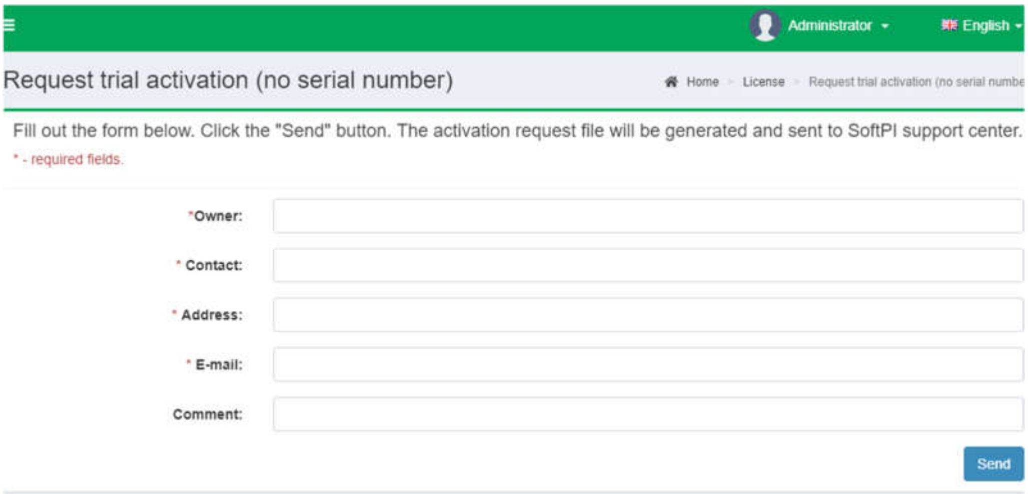


Figure 3.4

In the **Owner** box, enter your company name.

In the **Contact** box, enter your contact phone numbers.

In the **Address** box, enter the company address.

In the **E-mail** box, enter the e-mail address on which the activation key will be send, if the computer has no Internet connection.

In the **Comment** box, enter the desired Tariscope edition (Enterprise or Provider) and the desired number of subscribers or telephone numbers (extensions).

Click **Send**. The request information is sent to SoftPI if the computer with Tariscope has the Internet connection.

If Tariscope determines that the Internet connection is not available, a message that is shown in Figure 3.3 appears. Follow the steps mentioned in the window.

We do not provide test activation keys to anonymous users.

Applying the activation key

If the request file is sent automatically, receiving the activation key and applying it are performed automatically.

To verify that the activation key has been obtained, open the **License** page (Figure 3.1) and select **Current key properties**. The Tariscope page will be as shown in Figure 3.5.

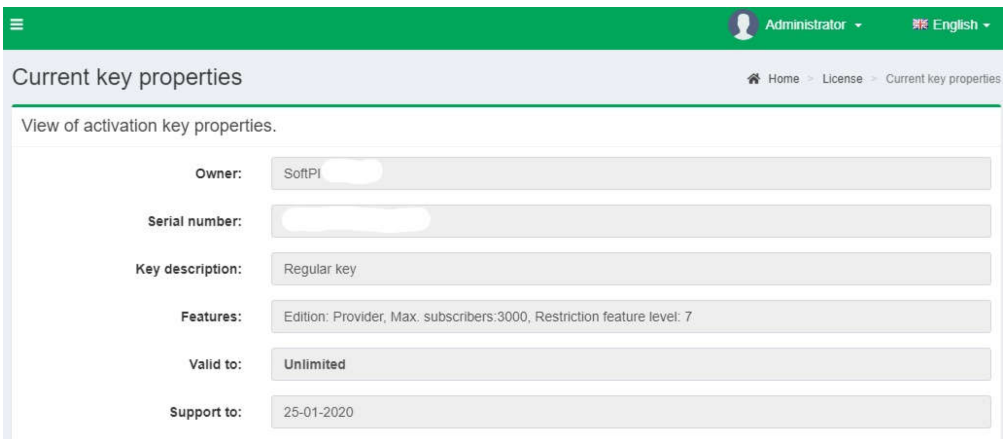


Figure 3.5

If you have received the activation key by e-mail, click **Apply an existing key** (Figure 3.1). The page will be as shown in Figure 3.6.

Figure 3.6

Click on the **Browse** button and select the file with the activation key. Click **Next**. The window displays the activation key parameters. An example of this is shown in Figure 3.5.

Chapter 4 Tariscope configuration

After the installation and the initial start, Tariscope automatically starts **Tariscope assistant** if you installed it with the empty Tariscope database.

4.1 Tariscope assistant

The Tariscope assistant provides a basic configuration of the system, facilitating and accelerating this process.

The wizard allows to configure:

- Country and area codes.
- Telecommunications node name (company name).
- VAT percent.
- Main currency.
- Currency profile and a service for automatic update of currency rates.
- Telecommunications equipment type.
- Advanced settings of telecommunications equipment.
- Long distance dialing and international dialing prefixes.
- The data source through which the data will be collected (a serial port, TCP server/client, FTP server/client, etc.), and its parameters.
- Service provider, through which telephone system is connected to the telephone network (PSTN).
- Access code to PSTN.
- The internal numbering plan.
- Prefixes.
- Import of subscribers' (customers') parameters.
- Parameters of the database backup, archiving and optimizing.

After completing the initial configuration, the Tariscope administrator can change these settings at any time or configure the new parameters that are not available in the wizard.

Start

The page of the Tariscope assistant wizard is automatically opened after the initial startup of Tariscope (Figure 4.1.1). The Tariscope administrator can skip any of the steps of the wizard and continue the configuration of these parameters at any later time or opt out of this configuration.

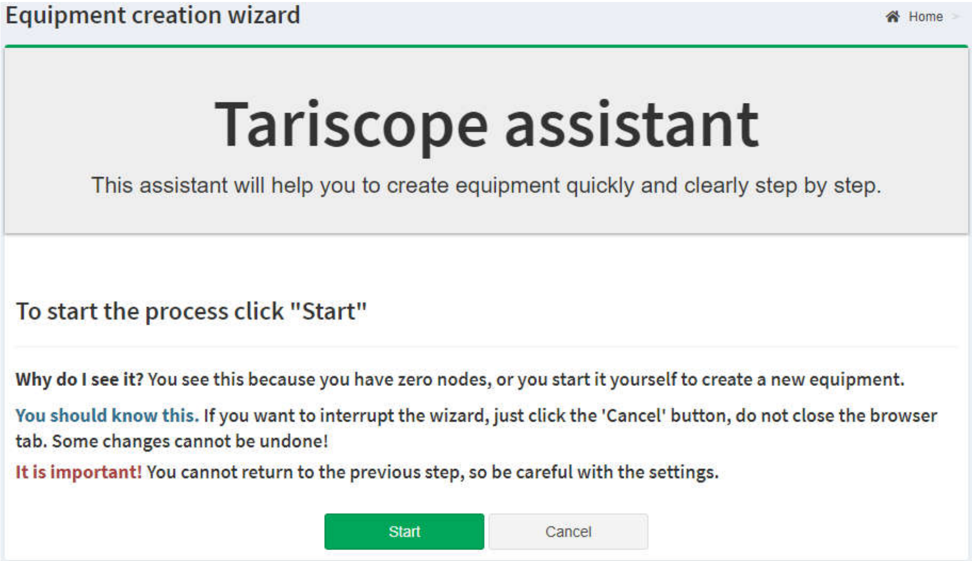


Figure 4.1.1

The first page of wizard is an information one.
After acquaintance with contents of the first page, click **Start**.

Configuration steps

Initial Tariscope configuration

The first step allows you to configure the main Tariscope parameters (Figure 4.1.2).

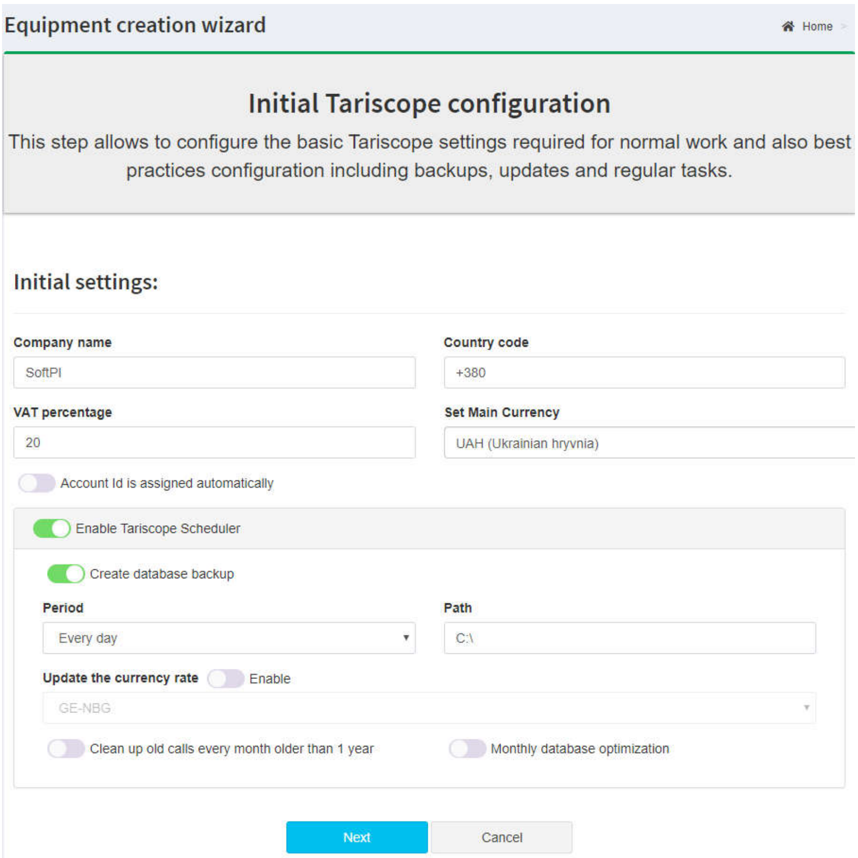


Figure 4.1.2

In the **Company name** box, enter your company name.

In the **Country code** box, enter your country code **instead of "+"**.

In the **VAT percent** box, you can type percent of VAT, which can be used when you create reports on the cost of calls.

In the **Set Main Currency** list, select the currency name, which will be the main in the Tariscope.

If you use Tariscope Provider, you can assign an account number yourself or Tariscope will assign the account number automatically. In order to Tariscope will assign account numbers automatically, turn on the **Account Id assigned automatically** switch.

Tariscope can automatically execute some tasks. You should use Tariscope Tasks for this purpose. Turn on the **Enable Tariscope Scheduler** switch, to activate this service. The **Initial Tariscope configuration** page contains four tasks that Tariscope Tasks can perform.

To automatically create the Tariscope database backup, turn on the **Create database backup** switch. In the **Period** list, select the desired period of the backup creation. In the **Path** box, enter a path to save the backup.

If you will use call rates, which are set in the different currencies, and you want to recalculate the call cost into the main currency, turn on the **Update the currency rate** switch. And in the list, you should select the desired profile to get the currency rates. Currently profiles are available for Ukraine, Russia, Georgia, and Kazakhstan:

- **UA-NBU.** Currency rates in relation to the UAH according to the National Bank of Ukraine.
- **UA-PIB.** Currency rates in relation to the UAH according to the Prominvestbank of Ukraine.
- **GE-NBG.** Currency rates in relation to the GEL according to the National Bank of Georgia.
- **RU-CBR.** Currency rates in relation to the RUB according to the Central Bank of Russian Federation.
- **KZ-NB.** Currency rates in relation to the KZT according to the National Bank of Kazakhstan.

If the required profile is not in the list, skip this setting. You can execute it later in another configuration page.

If you do not need to store calls information for more than 1 year to reduce the size of the database, you can delete old calls automatically. Turn on the **Clear up old calls every month older than 1 year** switch.

If you want to automatically optimize the parameters of the Tariscope database each month, turn on the **Monthly database optimization** switch.

Click **Next**.

Step 1. Communication nodes

This page of configuration wizard allows you to create a new telecommunication node (Figure 4.1.3).

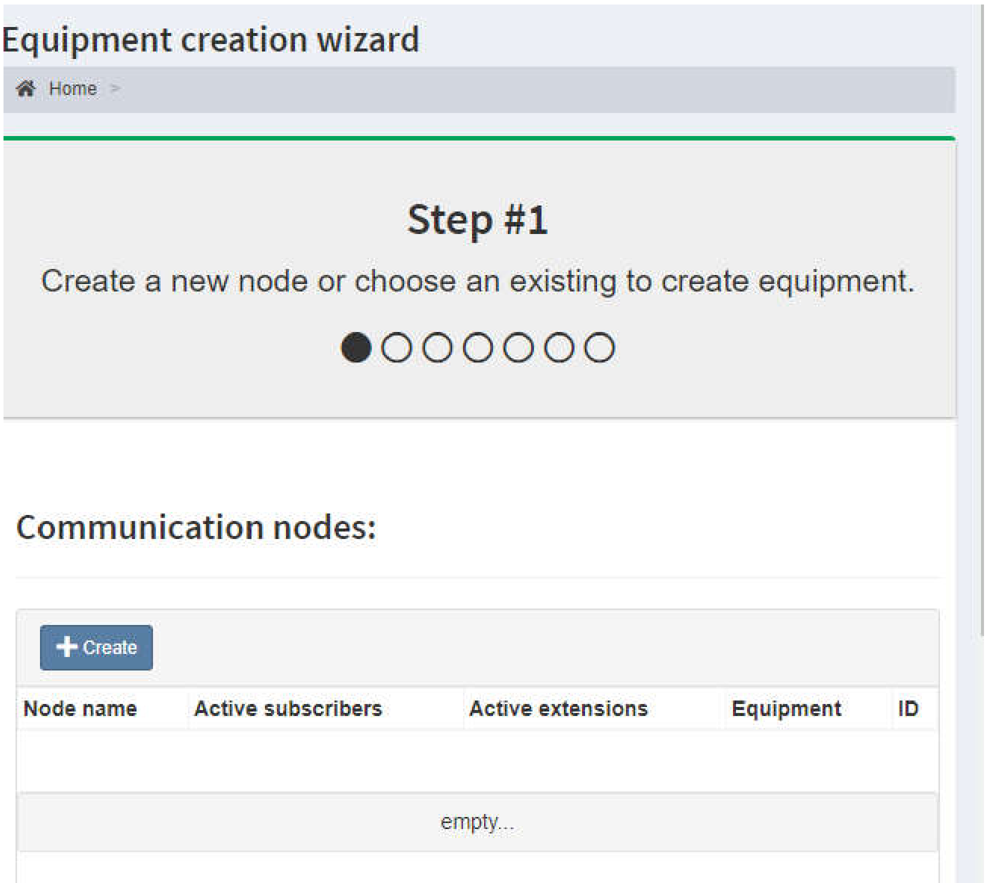


Figure 4.1.3

Click **Create**. The **New node** window appears as shown in Figure 4.1.4.

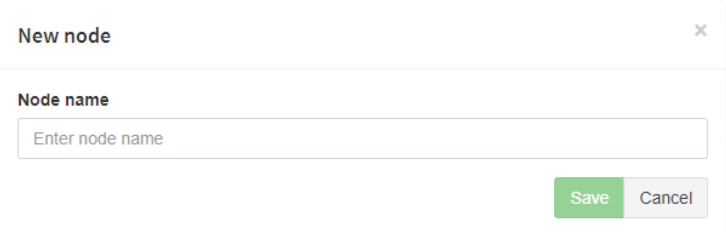


Figure 4.1.4

In the **Node name** box, enter a node name and click **Save**. If you want, you can create some communication nodes.

Select the table row with the node for which you will add a list of telephone systems.

Click **Next**.

Step 2. Create an equipment and configure the minimum required parameters

The page of the second configuration step is shown in Figure 4.1.5.

In the **Name** box, enter a telephone system name. For example: CUCM or 3CX, or another.

In the **Long distance prefix** box, enter the prefix. For most of the countries it is 0.

In the **International code** box, enter the code. For most of the countries it is 0.

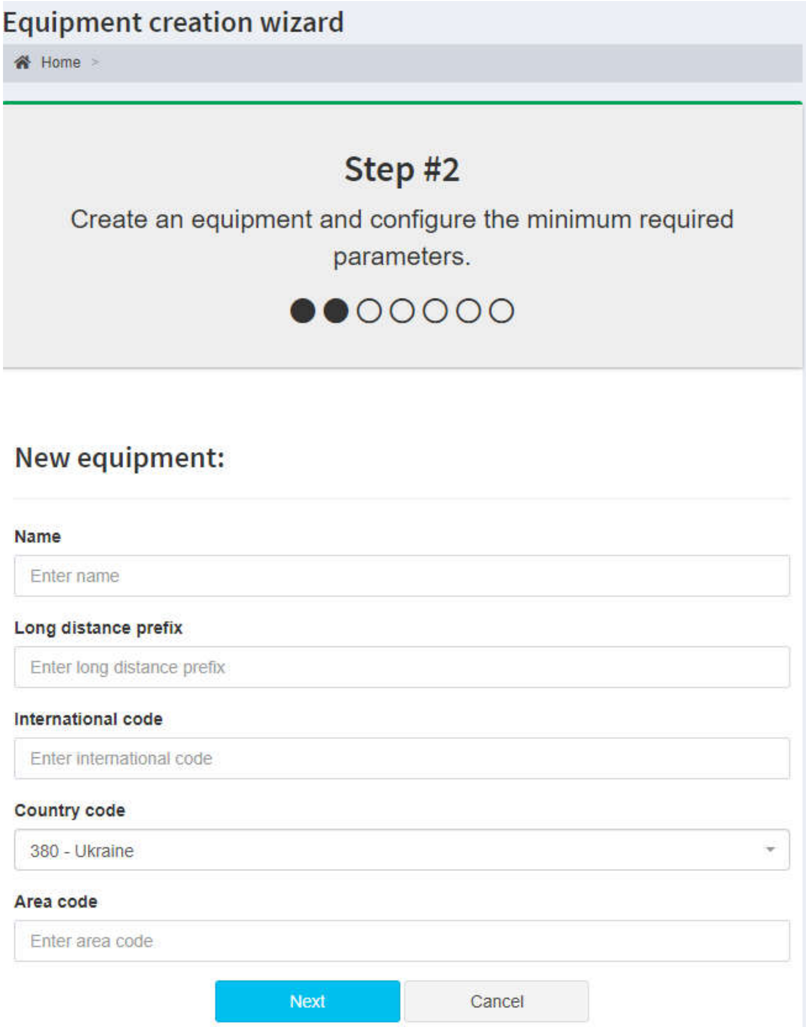


Figure 4.1.5

In the **Country code** list, the country name is displayed that you selected on the **Initial Tariscope configuration** page. If you wish, you can change the country name.

In the **Area code** box, enter the area code where your telephone system is located.

Click **Next**.

Step 3. Set the equipment type and configure CDR data source

A choice of the telephone system type effects on the correctness of processing call information. When the choice is wrong, the processing of call information will not be executed, or it will be executed with mistakes.

The choice of the desired type of telephone system is executed in the **Equipment** list (Figure 4.1.6). Select the desired type of telephone system. It is possible to specify additional parameters for some telephone systems. In this case, the **Advanced settings** button appears on right from the **Equipment** list (Figure 4.1.6). If the button has appeared, click on it. The **Advanced settings** window appears. It is specific one for each type of telephone system. The example of the window for Cisco Unified Communications Manager is show in Figure 4.1.7.

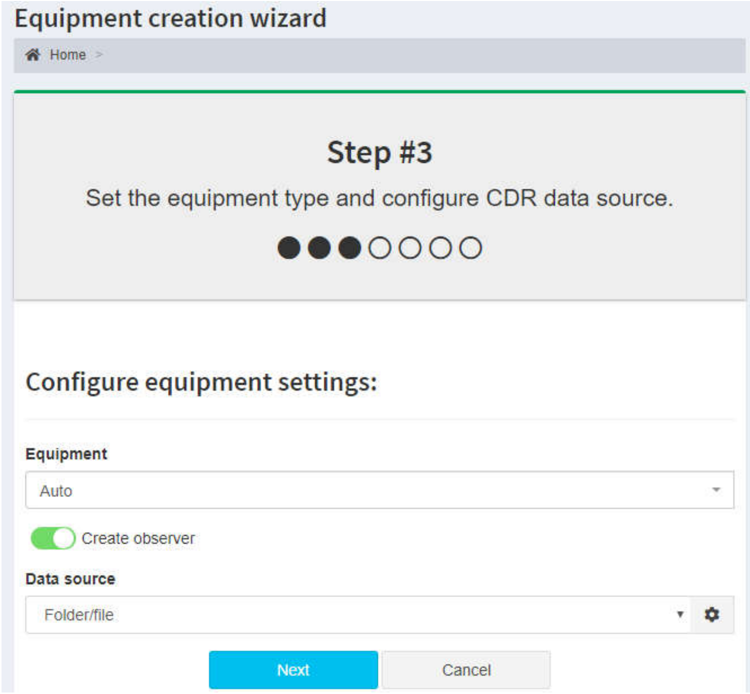


Figure 4.1.6

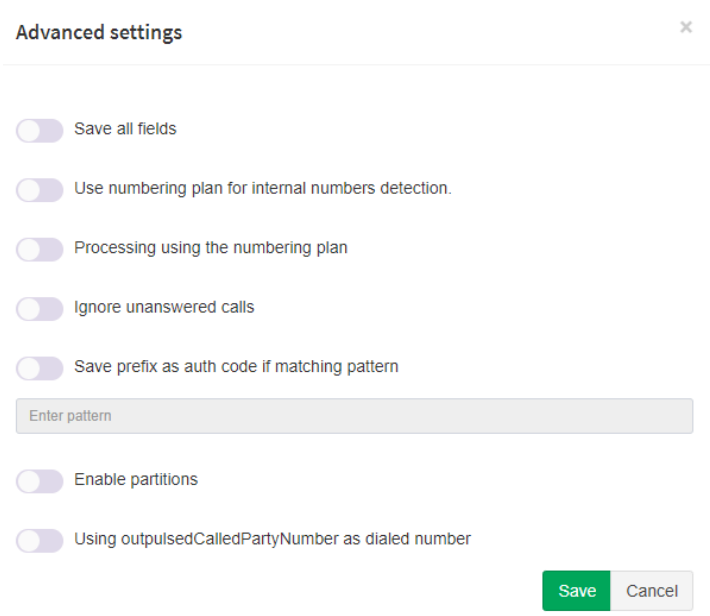


Figure 4.1.7

If necessary, select the desired parameters in this configuration window.

If you do not know exactly the type of your telephone system, in most cases Tariscope can try to determine it itself. Leave the **Auto** value in the **Equipment** list (Figure 4.1.6). In this case Tariscope will try automatically to determine the type of telephone system when it will process CDR. But for several PBXs (Alcatel OmniPCX Office, Aura, S8800, S8700, S8500, S8400, S8300, Definity), which have a custom CDR format, the automatic recognition is not impossible.

If you want that Tariscope will automatically receive CDR data, you should create Tariscope Observer service. It is a service that collects CDR data and save them in the Tariscope database.

Turn on the **Create observer** switch.

In the **Data source** list, select a data source that will be used to collect CDR data. For example, it can be FTP or SFTP server for Cisco Unified Communications Manager.

To determine which data source is used in your telephone system, see the documentation on your telephone system. An incorrect selection or incorrect configuration of source parameters will not allow you to receive information from the telephone system.

Click on the **Advanced settings** button located on the right from the **Data source** list. The **Data source configuration** window appears. The window is specific to each data source. The example of the window for FTP server is shown in Figure 4.1.8.

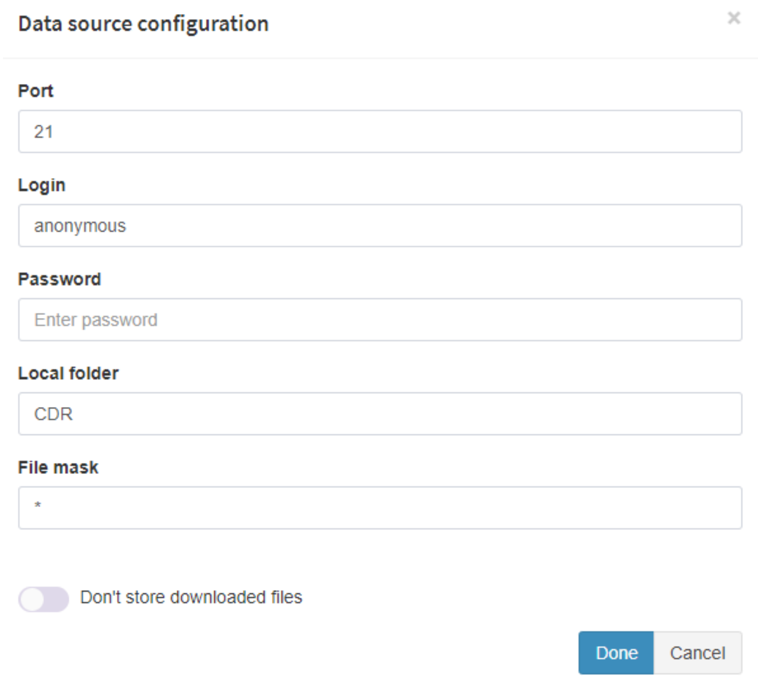


Figure 4.1.8

You can find a detailed description of all parameters for each type of data source later in this document or in articles of the Tariscope site.

As a result of the data source choice and setting of its parameters, the profile will be created. After the setup wizard finishes, start the Tariscope Observer service from the **Data Collection/Observer** page.

Click **Next**.

Step 4. Choose a telecom provider to rate calls

An example of this page is shown in Figure 4.1.9. The page contains a list of telecom providers. You should select a telecom provider to which your telephone system is connected. Also, you can create a new provider or import the provider from the Tariscope site.

Click on the **Providers for import** button. You will get the list of providers. Select the desired provider from the list.

If you have not found the required provider, you can create it.

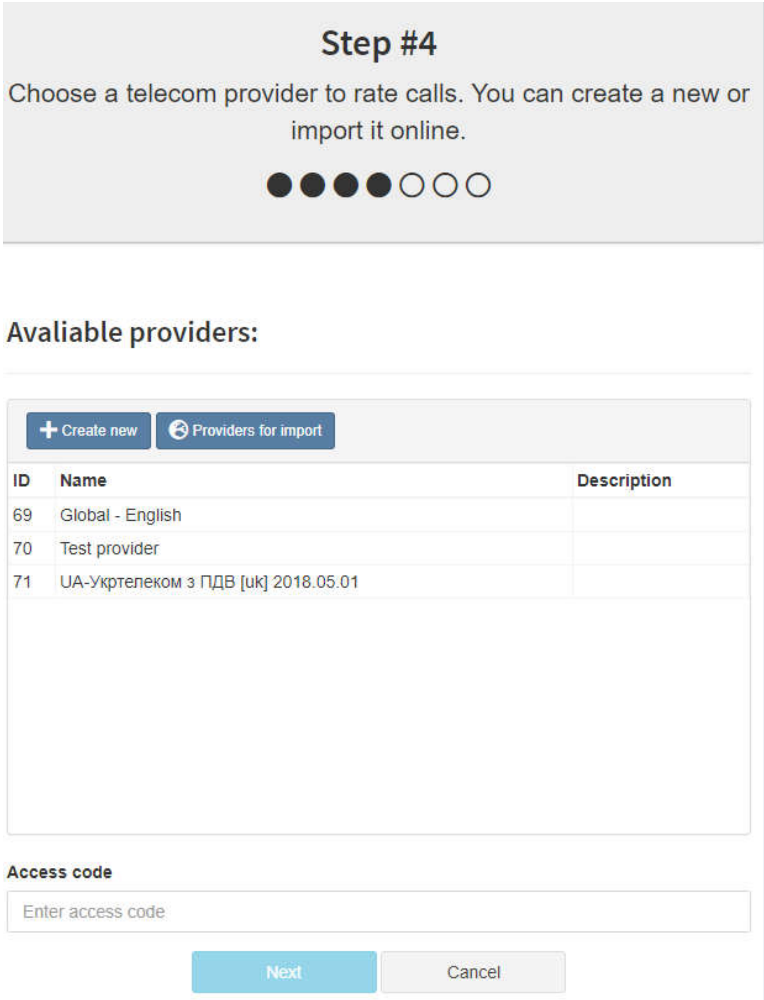


Figure 4.1.9

To do this, click on the **Create now** button. The **New provider** window appears as shown in Figure 4.1.10.

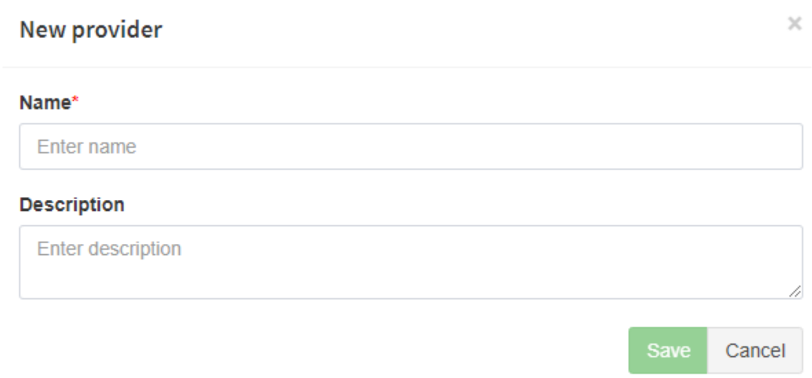


Figure 4.1.10

In the **Name** box, enter the telecom provider name.

In the **Description** box, you can enter a description for the provider.

Click **Save**. The provider's name will be displayed in the provider table on the **Available provider** configuration page.

Select the desired provider.

If in your telephone system the access code is used to access to the provider, enter the access code in the **Access code** box.

Click **Next**.

Step 5. Configure the numbering plan

The **Numbering plan** page allows you to set an internal numbering plan (Figure 4.1.11). It is required to detect your subscribers' extensions from the CDR data.

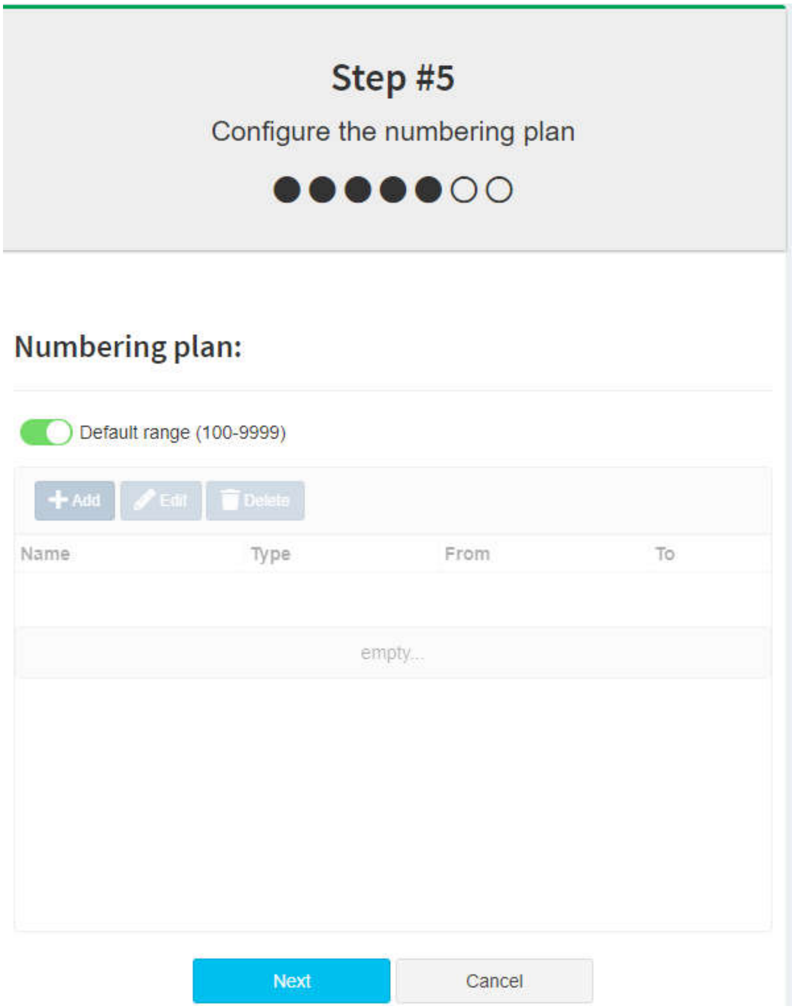


Figure 4.1.11

This setting can also be useful when you must manually enter the large number of extensions in the Tariscope database.

If the **Default range (100-9999)** switch turns on, this means that your extensions must be from 100 to 9999. If you have extensions with other telephone numbers, you should turn off the switch and click **Add**. The window appears as shown in Figure 4.1.12.

In the **Name** box, type the name of a numbering plan.

In the **Type** list, select the **Phone Numbers** item.

In the **From** box, type a telephone number from which the numbering range is started.

In the **To** box, type a telephone number which the numbering range is ended.

Click **Save**.

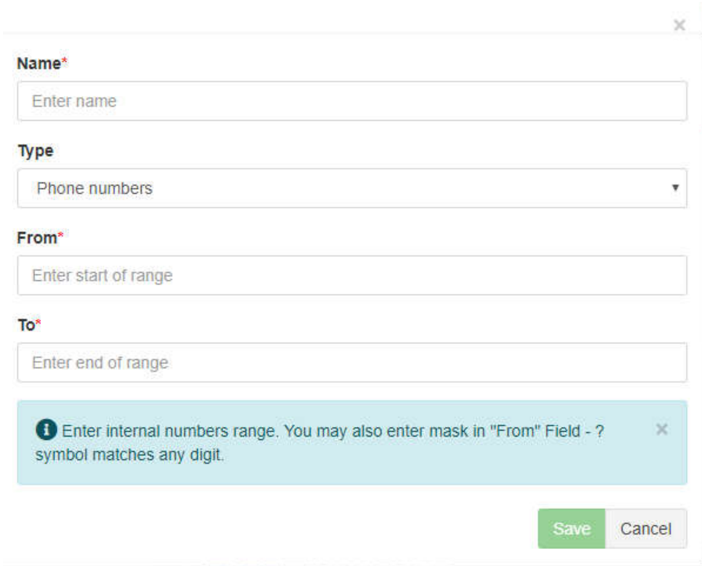


Figure 4.1.12

If necessary, repeat the procedure.
After the input, click **Next**.

Step 6. Create the prefixes

The **Prefixes** configuration page (Figure 4.1.13) is used to change a prefix in dialed numbers for outgoing calls or telephone numbers of calling party for incoming calls if it is necessary.

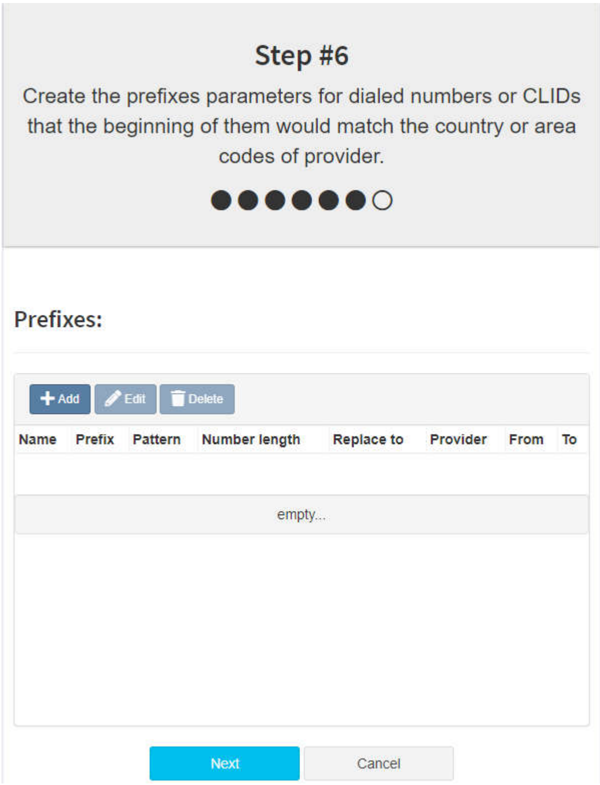


Figure 4.1.13

If you do not use prefixes, click **Next**.
To specify a prefix, click **Add**. The window appears as shown in Figure 4.1.14.

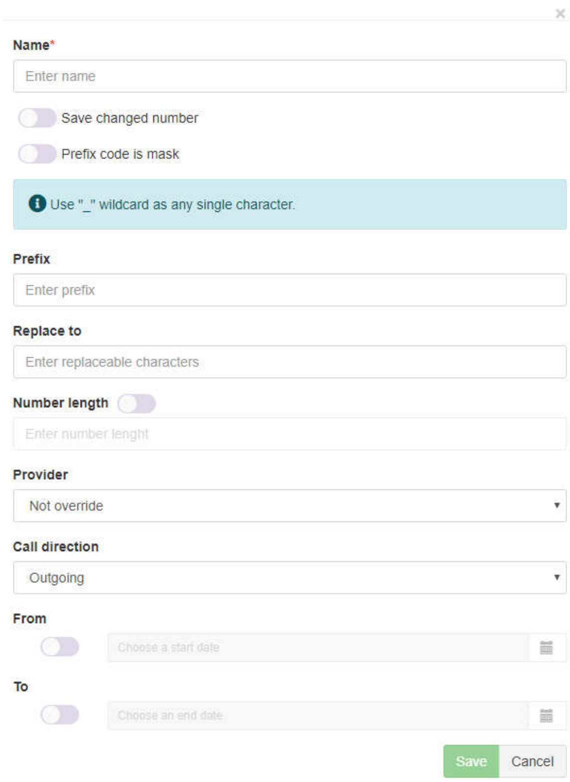


Figure 4.1.14

In the **Name** box, type a rule name to change prefixes. This is an information field.

If you want that a telephone number after application of the prefix rule will be saved, click on the **Save changed number.**

If you wish to use this rule to group of prefixes, which have different digits in the same position, turn on the **Prefix code is mask** switch. In this case, in the **Replace to** box, you should type the underscore character ("_") in the required position.

In the **Prefix** box, type a prefix, which you want to change on another code.

When the rule should be applied only to a certain length of telephone number, turn on the **Number length** switch and specify its length.

In the **Replace to** box, type a value of the prefix, which should replace the beginning of the telephone number.

If you wish to rate calls that contain this prefix using specific rates, select a telecom provider name from the **Provider** list, which provides such rates.

The prefixes can be set to dialed numbers or the telephone numbers of calling party from which incoming calls were made. Depending on which type of phone numbers you want to use a prefix, in the **Call direction** list, select **Outgoing** or **Incoming**.

The **From** and **To** boxes allow you to specify a valid period of the prefix rule.

Click **Save**.

Repeat these actions to add the next prefix rule.

Click **Next**.

Step 7. Select an option to add subscribers

The **Subscribers** page (Figure 4.1.15) allows you to select an option to add subscribers' data into the Tariscope database.

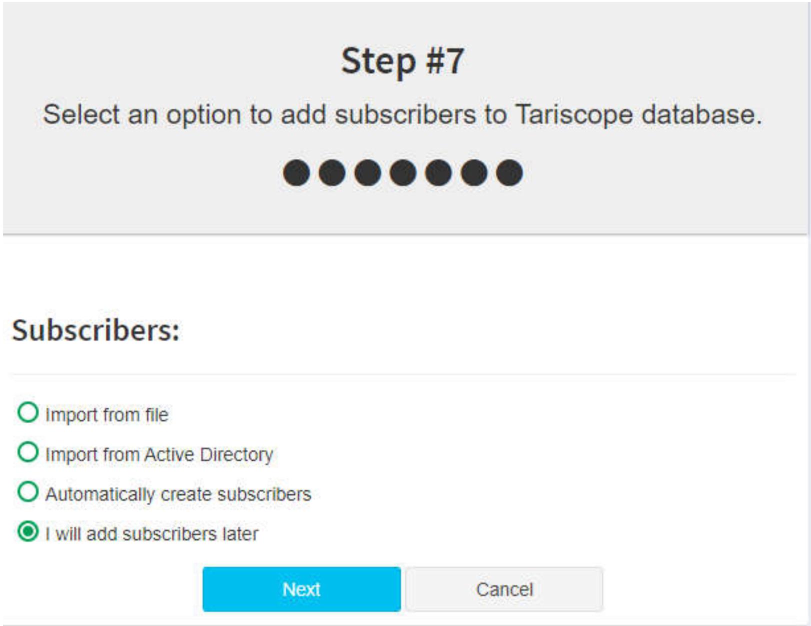


Figure 4.1.15

Tariscope supports several different options of the customer (subscriber) data entry. In the wizard, you can enter the data only in automatic modes:

- **Import from file**. The subscriber data are imported from files of the following formats: Microsoft Excel, Excel 2007, Access, Access 2007, CSV.
- **Import from Active Directory**. The subscriber data are imported from Microsoft Active Directory or LDAP catalog.
- **Automatically create subscribers.** The subscriber data are created during the time of processing of CDR data. A subscriber will have a name that is the same as his phone number with 'a' prefix. You can change this name later.

Select the desired option and import the subscriber data.

If you wish to input the subscriber data into the Tariscope database later, select the **I will add subscribers later** option.

Click **Next**.

The **Equipment creation wizard** will finish its work. If you will need to add another communication node or telephone system, you can start the wizard from the Tariscope menu.

4.2 Applications for configuration. Configuration steps

The configuration of the Tariscope system is performed in the following applications:

- **Tariscope Start**.
- **Tariscope**.

The main configuration of the Tariscope system are performed in the **Tariscope** application. The application also allows you to analyze call information, create reports, work with customers' accounts (in Tariscope Provider), and others.

To create own report forms, you should use **Microsoft Report Builder 3.0**. The program is not included in the Tariscope installation package. You can download it from the Microsoft site.

The Tariscope Start program (only for Windows) is used to upgrade the Tariscope database of previous version to Tariscope 4.6, set the IP port for Tariscope, set HTTPS, change the connection settings to the Microsoft SQL Server where the Tariscope database is located, set a period of log, start, and stop Tariscope. The Tariscope Start program is described in the Installation for Windows section.

The Tariscope configuration can be executed in any sequence. The main requirement for the proper operation of Tariscope is that all required data must be entered and determined.

After the first start of Tariscope the **Tariscope assistant** wizard is started (Section 4.1).

If you have entered all the necessary data using the Tariscope assistant wizard, you can skip a further description of the configuration steps and get to work.

If the initial configuration page has been skipped, or not all the necessary data have been entered, we offer to configure Tariscope using the next step-by-step guide.

Step 1	In the **Currency rates** page, select a main currency.
Step 2	Is more than one currency used in the rates? If YES go to Step 3 otherwise go to Step 4.
Step 3	Type the currency rates in the **Currency rates** page.
Step 4	Do you wish divide calls by categories? If YES, go to Step 5. Otherwise, go to Step 6.
Step 5	Type a list of categories in the **Categories** page (**Additional options** → **Categories**).
Step 6	Are you a telecommunications provider (you use Tariscope Provider)? If YES, go to Step 7. Otherwise, go to Step 10.
Step 7	Is more than one rate plan used for customers (subscribers)? If YES, go to Step 8. Otherwise, go to Step 9.
Step 8	Type names of rate plans in the **Rate plans** page.
Step 9	Type a list of services and their parameters in the **Services** page.
Step 10	Does Tariscope contain the information about your providers? If NO, go to Step 11. Otherwise, go to Step 17.
Step 11	Add a new provider in the **Providers and rates** page.
Step 12	Add the new rates for outgoing calls and type their parameters in the **Provider and rates** → new provider → **Outgoing** → **Rates** page.
Step 13	Add the new rates for incoming calls, if it needs, and type their parameters in the **Provider and rates** → new provider → **Incoming** → **Rates** page.

Step 14	If the provider provides telephone service, add the area codes, telephone numbers and their parameters in the **Provider and rates → Common phone codes** page.
Step 15	If provider provides access to Internet, add the IP networks in the **Provider and rates** → new provider → **IP networks** page.
Step 16	If necessary, add or change day types in the **Provider and rates** → new provider → **Outgoing / Incoming → Day types** page.
Step 17	Create a new telecommunication node in the **Communications nodes → Node management**. Click **Add** icon and enter the node name.
Step 18	In the menu, select the created node → **Equipment → Equipment management**. Select the **New equipment** and click **Edit**. Set parameters of this equipment on the **New equipment** page.
Step 19	If necessary, create numbering (dialing) plan in the Your node → **Equipment** → your PBX → **Numbering plan**.
Step 20	Type parameters of routes, trunks or gateways in the Your node → **Equipment** → your PBX → **Routes and Gateways**.
Step 21	If necessary, type prefixes and its parameters in the Your node → **Equipment** → your PBX → **Prefixes**.
Step 22	If you have the Tariscope license with the restriction feature, add the restriction classes in the Your node → **Equipment** → your PBX → **Restriction classes**.
Step 23	If you need to add a new equipment for the node, create one in the **Equipment management** page and, go to Step 18. Otherwise, go to Step 24.
Step 24	Type parameters of subscribers (customers) in the Your node → **Subscribers**.
Step 25	Create a profile of the Tariscope Observer service and configure its parameters in the **Data collection/Observer → Observer management**.
Step 26	Start the Tariscope Observer service using the page: **Data collection/Observer → Observer management**. Select the desired profile and click on the **Control** icon → **Start**.
Step 27	Do you need notifications about events in Tariscope? If YES, type parameters of notifications in **Additional options** → the **Notifications and mailing** page. Otherwise, go to Step 28.
Step 28	Should Tariscope interact with a hotel system? If YES, configure data for the interaction in **Additional options → Integrations → Hotel systems**. Otherwise, go to Step 29.
Step 29	Should Tariscope automatically execute the following actions: a generation of reports, backup of the database, and others? If YES, create a new task in the **Tariscope Tasks → Task list**, configure its parameters. Otherwise, go to Step 30.
Step 30	Do you want to account for IP traffic from a network equipment using NetFlow (v5 or v9), IPFIX, rFlow, cFlow protocols? If YES, configure parameters of **NetFlow collector**: **Additional options → Integrations → NetFlow/IPFIX/rFlow Collector → Open settings**, and start the service clicking on **Run service**. Otherwise, go to Step 31.

Step 31	Will more than one user work with Tariscope? If YES, create the new users and set their parameters: **Additional options** → **Users**. Otherwise, go to Step 32.
Step 32	Finish.

4.3 Currency rates

Tariscope provides a work with data of several telecommunications service providers, which can have the rates (tariffs) in different currencies. If you will use rates in Tariscope in more than one currency, all calculations are executed in the currency that is a main currency. For conversion of all used currencies to the main currency, you need to enter the currency rates in Tariscope. For this purpose, select in the menu the **Currency rates** item.

The **Currency rates** page is opened as shown in Figure 4.3.1.

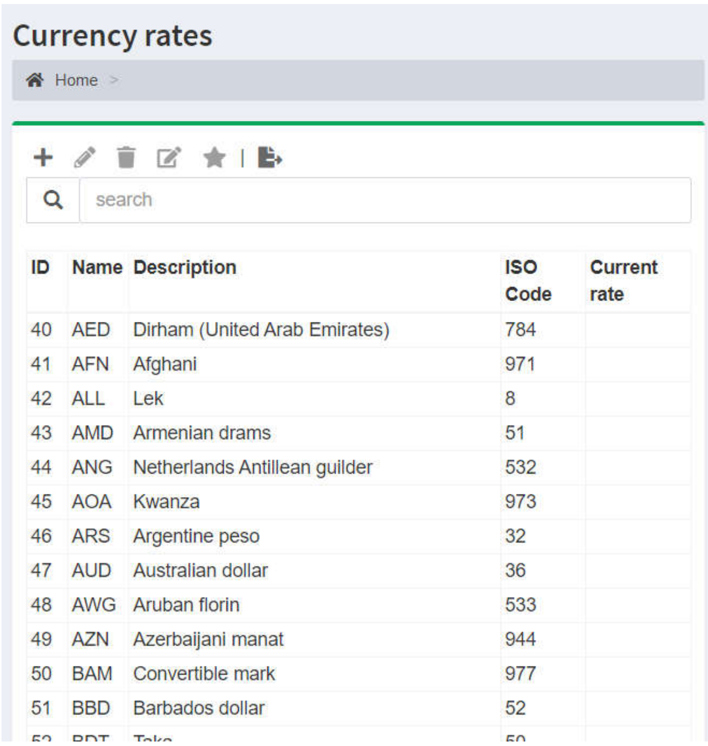


Figure 4.3.1

The page contains a list of all the currencies of the world.

This page allows you to execute actions that are available using the icons on the toolbar:

- **Add**. Provides an addition of a new currency.
- **Edit**. Allows to edit the currency parameters.
- **Delete**. Allows to delete a selected currency from the list.
- **Rename**. Allows to rename a selected currency.
- **Set Main Currency**. Allows to set a selected currency as a main one.
- **Export to file**. Allows you to export the currency table into the Excel, HTML, CSV, or PDF file.

A currency that was selected as a main one is marked by the **bold** font. The Tariscope administrator can change the main currency any time. Select the currency that should be the main one in Tariscope. To quick search, use the **Search** box. The search is performed on all columns of the table. Next, click on the **Set Main Currency** icon.

In that case, when the rates are given in two or more currencies, you should set exchange rates in relation to the main currency. For example, in Ukraine, the domestic rates are specified in UAH, and rates for international calls are specified in U.S. dollars. Therefore, you must set the exchange rate of U.S. dollar to hryvnia.

To set an exchange rate, select the currency that you will need to recalculate to the main currency. Click the **Edit** icon on the toolbar. The **Editing** page appears as shown in Figure 4.3.2.

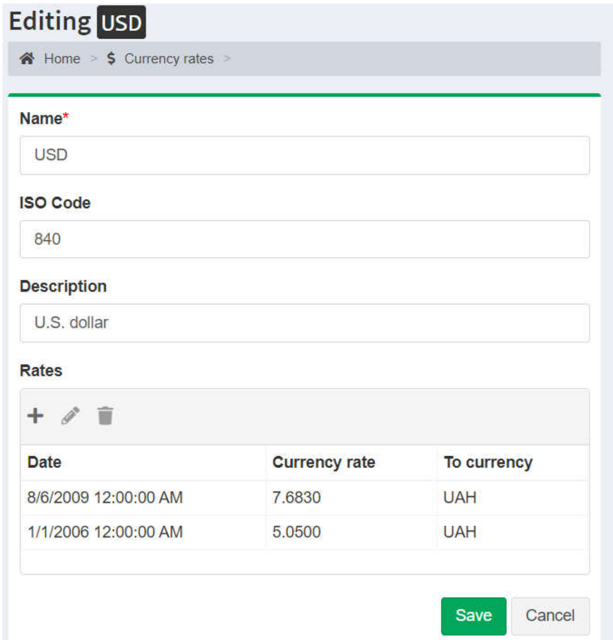


Figure 4.3.2

To add a new currency rate, in the **Rates** section, click on the **Add** icon on the toolbar. The **Add** window appears as shown in Figure 4.3.3.

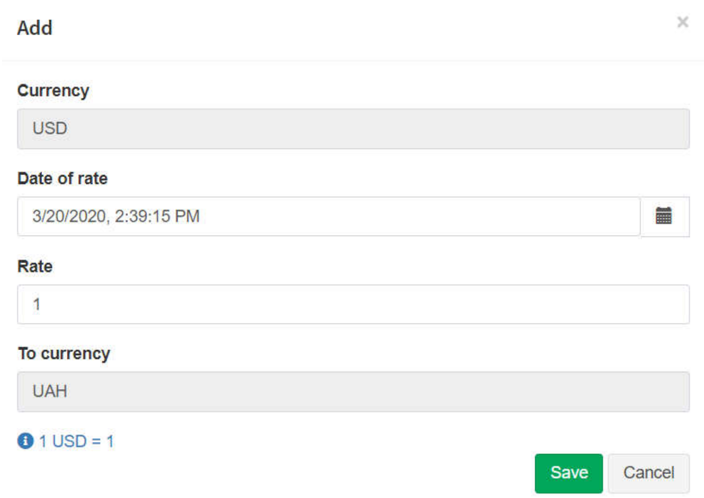


Figure 4.3.3

In the **Date of rate** calendar box, select date of the currency rate.

In the **Rate** box, type the currency rate and click **Save**.

The row with the entered rate is displayed in the table of the **Editing** page (Figure 4.3.2).

If you need to correct any currency rate in the table, select the required row and click **Edit**. The **Edit** window appears. It is the same as the **Add** window (Figure 4.3.3). Edit the date or rate value and click **Save**.

If you need to remove any currency rate from the table, select the required row and click **Delete**. The row will be removed.

After you will finish to add or edit currency rates, click **Save** on the **Editing** page.

If you need to periodically input currency rates, we recommend using the **Tariscope Tasks** page, which allows you to create the task that provides automatic receiving exchange rates on a schedule. The configuration of the **Tariscope Tasks** service is described later.

4.4 Rate plans

In Tariscope a rate plan (tariff plan) means a set of rates from one or more telecommunications service providers, which are applied to one or group of customers (subscribers) to charge the cost of calls, telecommunications services, and Internet traffic. A rate can be included in more than one rate plan.

At the simplest case and primarily for users of the Tariscope Enterprise edition, a single rate plan can be used for all subscribers of a single telephone system or data device.

To select, create or edit a rate plan, click on the **Rate plans** item of the Tariscope menu. As a result, the **Rate plans** page is opened. An example of the page is shown in Figure 4.4.1.

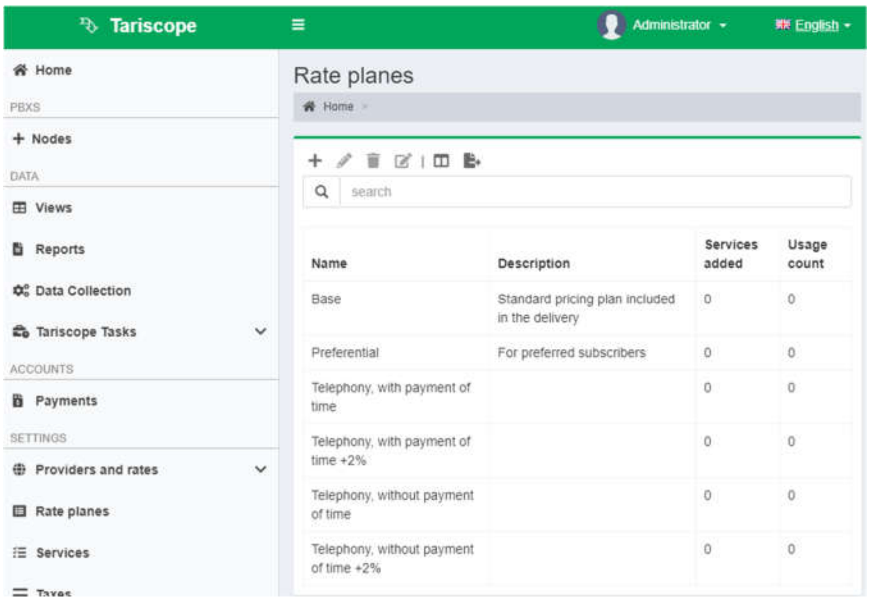


Figure 4.4.1

By default, the Tariscope installation includes two rate plans: **Base** and **Preferential**. The administrator can change these names or deletes the rate plans. A name of a rate plan can be arbitrary and comprehensible for the Tariscope administrator.

As mentioned above, usually the **Base** rate plan is sufficient to configure the Tariscope Enterprise edition. Other rate plans are not necessary in this case.

Primarily this configuration page is necessary for telecommunications service providers.

To create a new rate plan, you should click on the **Add** icon on the toolbar. As a result, the **New rate plan** page appears as shown in Figure 4.4.2.

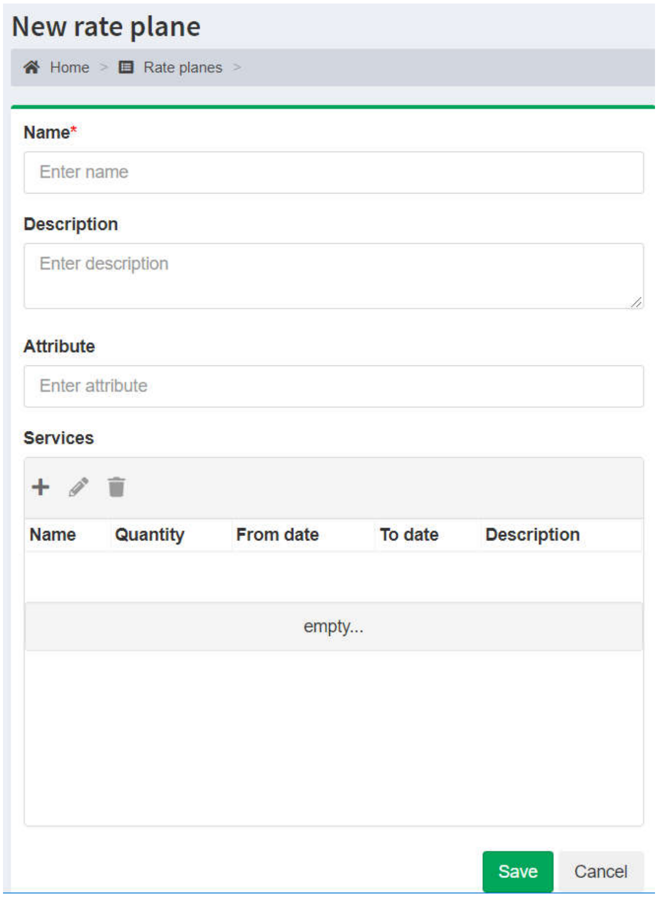


Figure 4.4.2

In the **Name** box, enter the rate plan name.

In the **Description** box, you can enter a description of the rate plan. This is an optional field.

If your new rate plan has some attributes, enter them in the **Attribute** box. For example, such attributes can be attributes of RADIUS server to set restrictions for subscribers, in the case Tariscope interacts with the RADIUS server.

If a rate plan must include the fixed services, for example, the monthly subscriber fee, you should add these services into the rate plan. Click **Add** icon on the toolbar of the **Services** section. The **Add** window appears as shown in Figure 4.4.3.

In the **Service** list, select the desired service. If the required service is absent in the list, create the service. How to create a new service see in the appropriate section of the documentation.

In the **Description** box, you can type a description of the service. This is an optional field.

In the **Quantity** box, type the quantity of the service that the rate plan will include. By default, the value is 1.

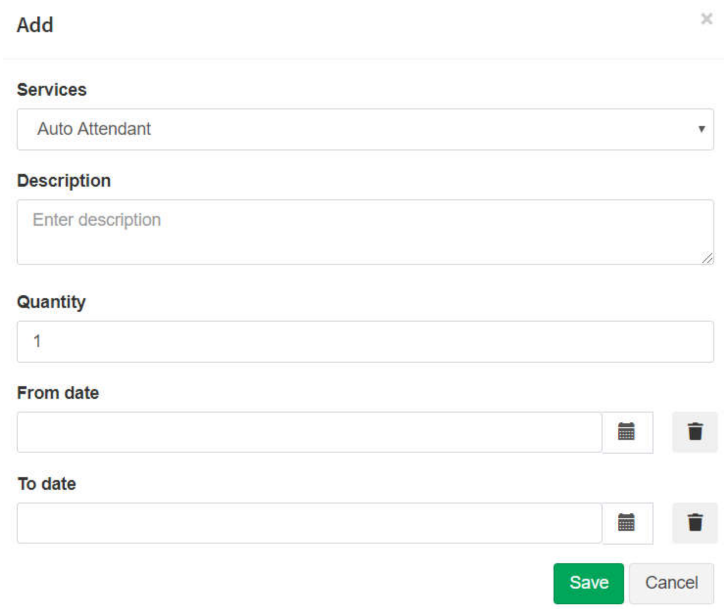


Figure 4.4.3

In the **From date** and **To date** calendar boxes you can set a period when the service will be applied. If these dates aren't set, it is considered that the service is applied permanently.

Click **Save**. The service will add to list of services (Figure 4.4.2).

If you need to edit a service from the rate plan, select a row with this service (Figure 4.4.2) and click on the **Edit** icon on the toolbar.

To delete a service from the rate plan, select a row with this service (Figure 4.4.2) and click on the **Delete** icon on the toolbar.

To save the rate plan parameters, click **Save**.

4.5. Categories

This configuration page allows the Tariscope administrators to type the names of categories of calls. The categories are associated with specific country codes, area codes, telephone numbers. The categories apply both outgoing and incoming calls. They are assigned to calls during processing CDR. The categories can have a hierarchical structure.

You can filter call information, generate reports by categories or you can set restrictions for subscribers using categories.

Relations between country codes, area codes, telephone numbers and categories are set up in **Providers and rates** → specific provider → **Outgoing** / **Incoming** → **Destinations codes**.

To move to the **Categories** configuration page, select in the menu: **Additional options** → **Categories**. The example of the **Categories** configuration page is shown in Figure 4.5.1.

By default, the Tariscope installation package can include the following categories:

- **Private**. You can assign this category to the calls made in private purposes.
- **Official.** You can assign this category to the calls made on the official matters.

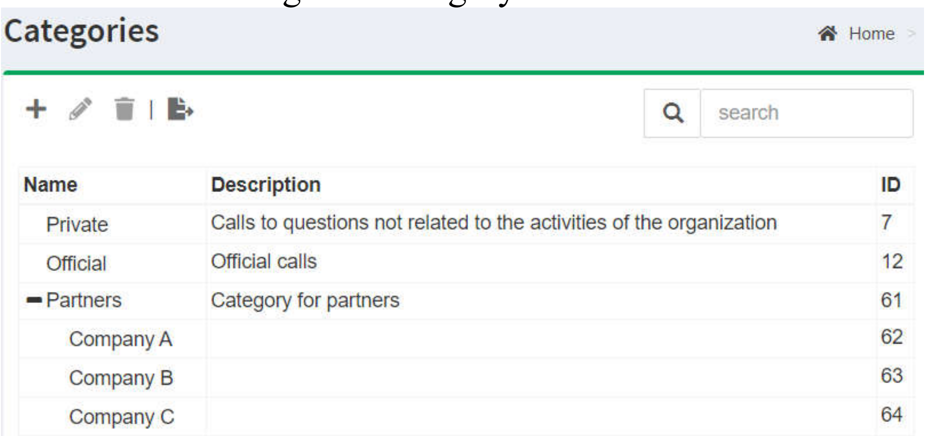


Figure 4.5.1

The proposed categories are only samples. You can use theirs as you wish. You can delete, edit these categories or create own categories. For example, you wish to select calls to partners, specific company or calls made within a particular project, etc.

To create a new category, click on the **Add** icon. The **New category** window appears as shown in Figure 4.5.2.

Figure 4.5.2

In the **Category name** box, type a new category name.

In the **Description** box, type a description of this category. The **Description** box is optional.

Click **Save**.

To delete some category, select this category and click on the **Delete** icon.

As seen in Figure 4.5.1, categories have a hierarchical structure. You can create different subcategories. For example, for the **Partners** category, you can create subcategories: Company A, Company B, Company C, etc. Such a structure of categories can be useful when filtering calls, create reports, etc.

To create a subcategory, select the desired category that will a root of categories tree and click the **Add** icon on the toolbar. Next, follow the steps as described above.

4.6. Taxes

If you need to charge the service costs with taxes, you should enter the taxes in Tariscope. In the Tariscope menu, select **Services** → **Taxes**. The **Taxes** page is shown in Figure 4.6.1.

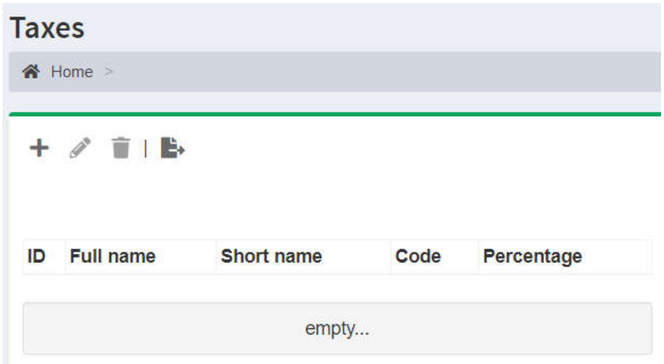


Figure 4.6.1

To add a tax, click on the **Add** icon on the toolbar. The **Add Tax** window appears as shown in Figure 4.6.2.

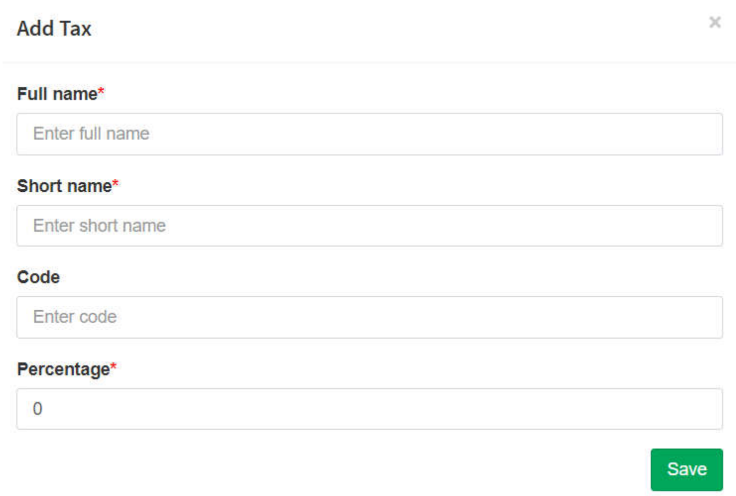


Figure 4.6.2

In the **Full name** box, enter the full tax name.

In the **Short name** box, enter the short tax name.

If you use codes for taxes, enter the tax code in the **Code** box.

In the **Percentage** code, enter the tax percent and click **Save**. The tax information is displayed in the table of the **Taxes** page (Figure 4.6.1).

To edit tax parameters, select the desired row in the table of the **Taxes** page and click on the **Edit** icon on the toolbar. The **Edit Tax** window appears. It is the same as the **Add Tax** window (Figure 4.6.2). Change the required data and click **Save**.

To delete a tax, select the desired row in the table of the **Taxes** page and click on the **Delete** icon on the toolbar.

You can export the tax table in an external file (Excel, HTML, CSV, or PDF). To do this, click on the **Export to file** icon on the toolbar.

4.7. Services

The **Services** mode is used to create services provided to customers (subscribers). The configuration page is urgent for telecommunications service providers who use the Tariscope Provider edition. Therefore, if you use the Tariscope Enterprise edition, you can skip this configuration page.

To create, edit, or delete a service, select in the menu **Service → Services list**. An example of the **Services** configuration page is shown in Figure 4.7.1.

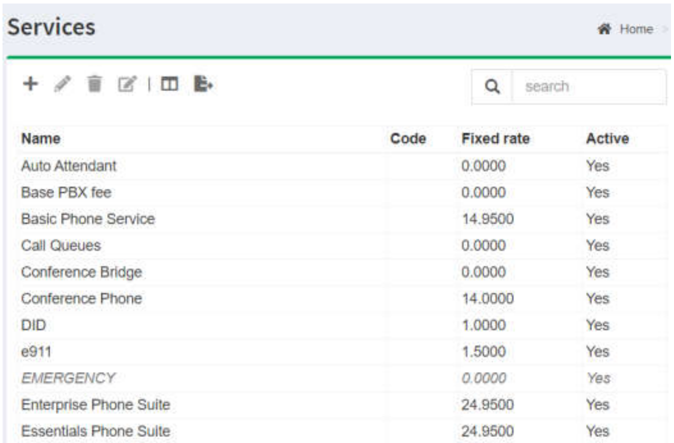


Figure 4.7.1

The Tariscope installation package can include examples of services. You can edit, delete these services or create new ones.

To create a new service, click on the **Add** icon on the toolbar. The **New service** window appears as shown in Figure 4.7.2.

In the **Name** box, type a service name.

If you use codes for services, type a service code in the **Code** box.

If you wish, you can type a description of the service in the **Description** box.

In the **Charging period** list, select the desired period. There are options:

- **Manual**. A service cost is charged manually. We recommend using this type for non-periodic services. To charge the service, select in the menu **Subscribers' accounts**, select the desired customer, click on the **Account actions** icon on the toolbar, and in the appeared menu, select **Add customer service**.
- **Every day**. A service cost is automatically charged, for example, in the beginning of every day. To automatically charge such services, you should create the appropriate task with daily period in Tariscope Tasks.

- **Every week**. A service cost is automatically charged, for example, in the beginning of every week. To automatically charge such services, you should create the appropriate task with weekly period in Tariscope Tasks.
- **Every month**. A service cost is automatically charged, for example, in the beginning of every month. To automatically charge such services, you should create the appropriate task with monthly period in Tariscope Tasks.
- **Annually.** A service cost is automatically charged, for example, in the beginning of every year. To automatically charge such services, you should create the appropriate task with annually period in Tariscope Tasks.
- **Application defined**. The option is applied for services for which a cost is charged by an execution of a procedure or generation of report. The execution of a procedure or generation of report can be automatically performed by the Tariscope Tasks service on the schedule or manually. Such an option can be used for calculating the costs for city (local) calls when the calls cost calculation is not considered N-th number of seconds.

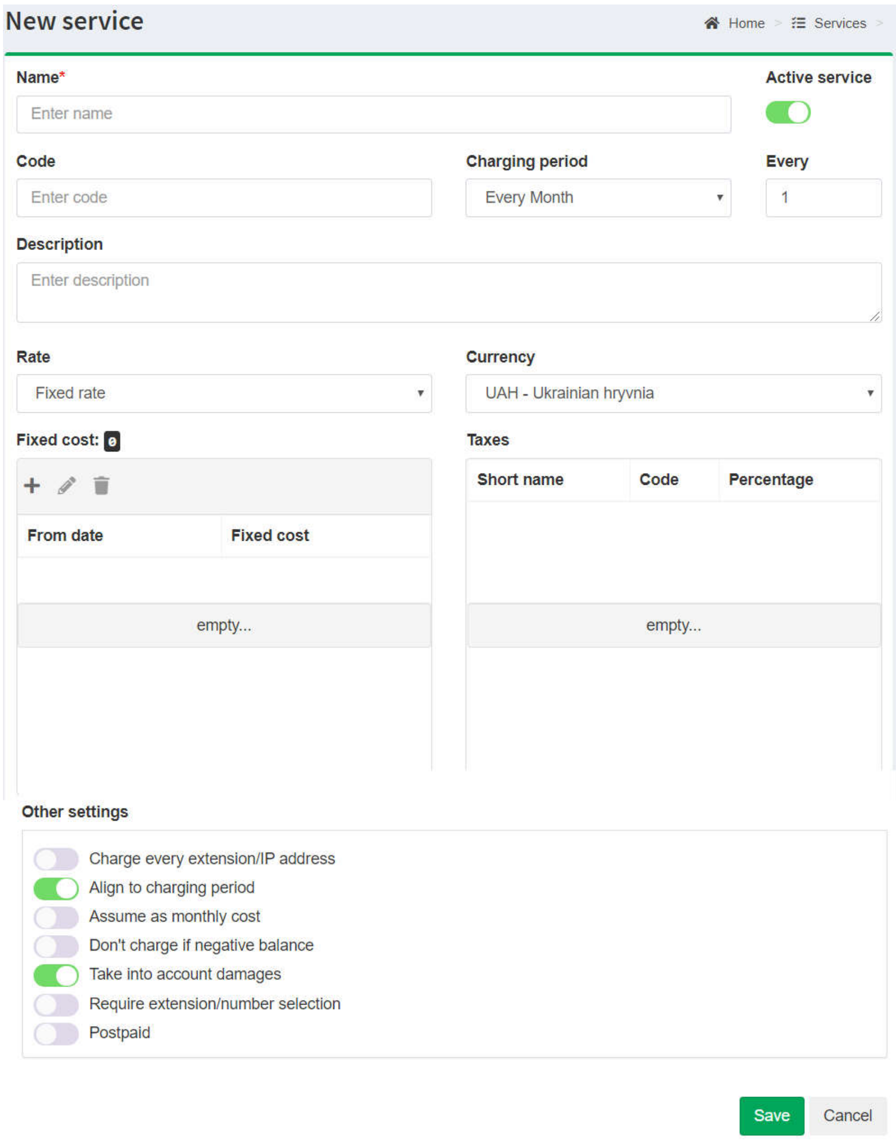


Figure 4.7.2

You can specify the period value. To do this, enter the value in the **Every** box.

The **Rate** list provides a selection of a rate that can be applied to the service. In this case the rate is used as a service. In Tariscope, the rates with the same names can have different values for the different rate plans (tariff plans). This provides using a single service name in different rate plans, but these services will have different rates.

For example, there are several types of subscription fee: base, privileged, and others, which you should type in Tariscope. Tariscope has two options to create such services. First, you can create the required number of services with different names. Another option, in the **Rates** configuration page you can create a service-rate named, for example, "Subscriber fee" and for different rate plans you should type their appropriate values. After that, in the **Service** page → the **Rate** list you should select this service-rate. In this case, no need to select service for each subscriber, but you only should assign the "Subscriber fee" service to all subscribers or a group of subscribers. A choice of the service cost for a subscriber will be determined by assigned rate plan.

When you select a rate for the service, the **Fixed cost** box and the **Currency** list will be inactive since the service cost and currency are defined by the rate parameters.

If you do not want to use a rate as a service, leave the **Fixed rate** item in the **Rate** list. In this case, type a cost of the service in the **Fixed cost** section and select a currency from the **Currency** box.

To add the service cost, in the **Fixed cost** section, click on the **Add** icon. The **Add** window appears as shown in Figure 4.7.3.

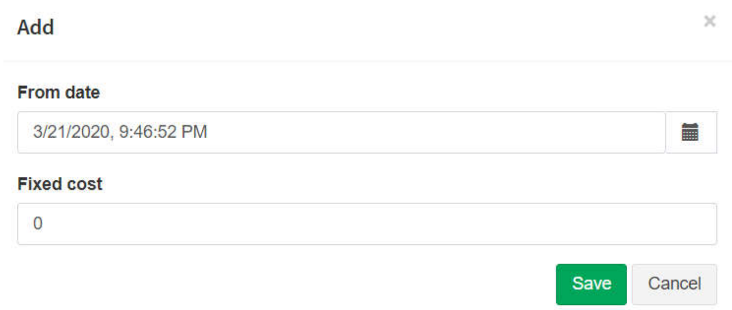


Figure 4.7.3

In the **From date** calendar box, select the date from which the service cost will be applied. This allows you to have a service cost history.

In the **Fixed cost** box, enter the service cost and click **Save**.

If you need to charge the service cost with taxes, you should add taxes as described in the section 4.6. These taxes will be displayed in the **Taxes** table of the **New service** page (Figure 4.7.2). Select the check boxes of the desired rows in this table.

In the **Other settings** section, turn on the switches for parameters that will be applied to the service:

- **Charge every extension/IP address**. This parameter allows you to charge the service cost on each customer's extension (phone number) or IP address for customers (subscribers) having several extensions or/and IP addresses. If the switch is not turned, the service cost will be charged for the customer only one time.

- **Align to charging period**. The parameter allows you to charge the service cost for the period of service provision. For example, a customer was connected from the 13th day of month and you need to charge the "Subscription fee" service which has monthly period. When the switch is turned, only the part of the service cost will be charged for the customer that is proportional to the period from the 13th to the end of the month.
- **Assume as monthly cost**. The selection of this check box means that the service cost specified in the **Fixed cost** box is a cost per month. And if the charging period is different from the month, the service cost is calculated. If the charging period is one month, this switch does not play any role.
- **Don't charge if negative balance**. If the switch is turned and a customer has a negative balance, the service cost is not charged.
- **Take into account damages**. If the switch is turned and an extension or IP address had a damage, and Tariscope has information about this, the service cost is not charged for the damage period.
- **Require extension/number selection**. If the switch is turned, the service cost is charged only to the specific extension or IP address of the customer, but not to the customer.
- **Postpaid**. If the switch is turned, the service cost is charged with a delay of one period.

After you set all parameters in the **New service** window, click **Save**.

To change the previously entered parameters any of the services, select the service on the **Services** page, and click the **Edit** icon.

To remove unnecessary service, you should select it in the list of services and click the **Delete** icon.

To change only the service name, select it in the list of services and click on the **Rename** icon, and then type a new service name.

The **Service** page allows you to select columns that you will be displayed. To select the desired columns, click on the **Setting columns visibility** icon on the toolbar and select or deselect the check boxes.

To export the services table in the external file, click on the **Export to file** icon and select the desired format. Supports the following formats:

- Excel.
- HTML.
- CSV.
- PDF.

Service bundles

A service bundle is a group of services which you can assign to a customer. If you have a service group that you assign to a group of customers, it’s easier to create a service bundle and assign it.

To create a service bundle, in the Tariscope menu, select **Services → Bundles list**. The **Bundles** page appears as shown in Figure 4.7.4.

Click on the **Add** icon on the toolbar. The **New bundle** page is displayed as shown in Figure 4.7.5.

In the **Name** box, enter a bundle name.

If you use codes for bundles, you can enter the code in the **Code** box. It is an optional field.

In the **Description** box, enter a bundle description. It is an optional field.

To include a service to the bundle, click on the **Add** icon on the toolbar of the **Services** section. The **Add service to bundle** window appears as shown in Figure 4.7.6.

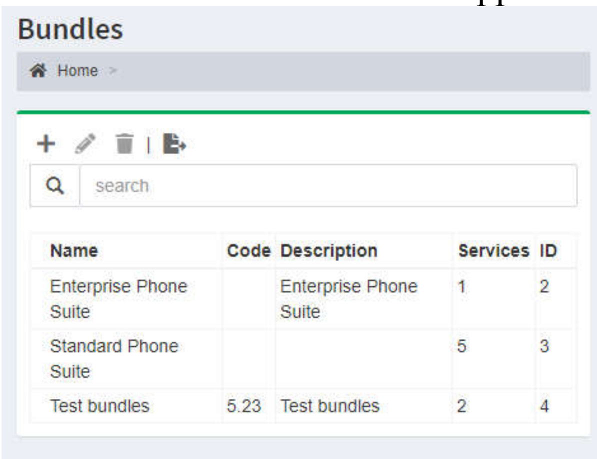


Figure 4.7.4

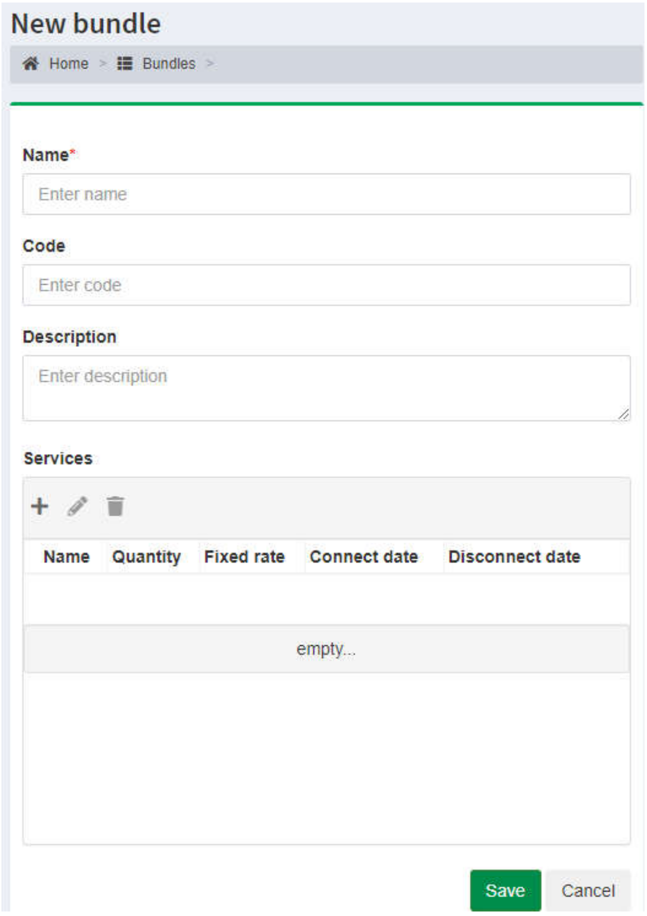


Figure 4.7.5

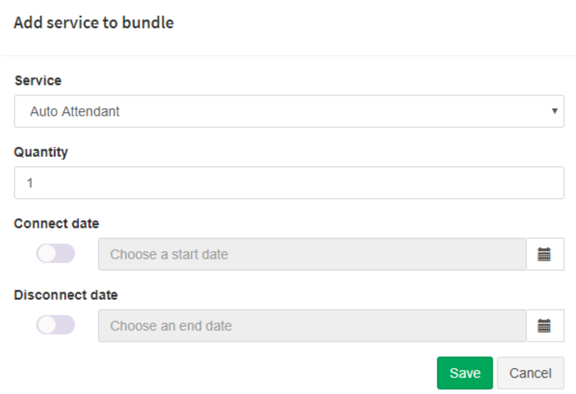


Figure 4.7.6

In the **Services** list, select the desired service name.

In the **Quantity** box, specify the number of services included in the bundle.

If the service begins to apply from the specific date, turn on the **Connect date** switch and select the desired date in the calendar box.

If the service should be applied only until a certain date, turn on the **Disconnect date** switch and specify the desired date in the calendar box.

Click on the **Save** button.

The entered service parameters are displayed in the **Services** table (Figure 4.7.5).

Repeat the actions for other services that you want to add in the bundle.

Click **Save** (Figure 4.7.5). The main parameters of the bundle are displayed in the table on the **Bundles** page.

To edit bundle parameters, select the bundle (Figure 4.7.4) and click on the **Edit** icon. On the **Edit** bundle page, edit parameters and click **Save**.

To delete a bundle, select it on the **Bundles** page and click on the **Delete** icon. Confirm your action.

Tariscope allows you to export the bundles table into an external file. To do this, click on the **Export to file** icon and select the desired file format. Supported the export in the following file format:

- Excel.
- HTML.
- CSV.
- PDF.

4.8. Rates

Tariscope provides a powerful and flexible call rating that takes into account a currency, day type, time of day, different types of rounding, free seconds, and many others. Tariscope supports separate rates for outgoing and incoming calls. Therefore, you should set rates separately for outgoing and incoming calls that were made through the specific telecom provider.

To create rates in Tariscope, in the menu, select **Providers and rates** → a required provider → **Outgoing** (for outgoing calls) or **Incoming** (for incoming calls) → **Rates**. The **Rates** page appears as shown in Figure 4.8.1. If you do not have the required telecom provider, create it as that is described below.

The page contains the toolbar, the **Search** box, a list of rate plans, and the rate table.

To create a new rate, click the **Add** icon on the toolbar. As a result, the **New rate** page appears as shown in Figure 4.8.2.

In the topmost list, select the desired rate plan for which you will set the rate data. For users of the Tariscope Enterprise edition a concept of rate plan is usually not used. As a rule, for the Tariscope Enterprise edition is enough to use only the **Base** rate plan.

In the **Name** box, enter the rate name.

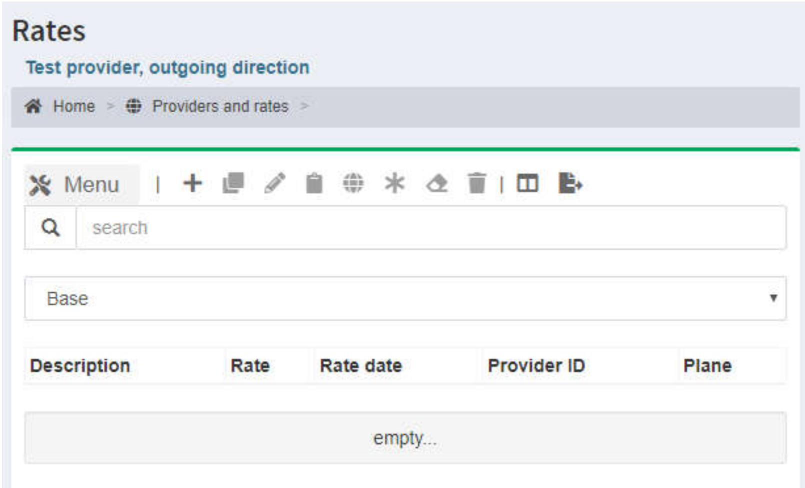


Figure 4.8.1

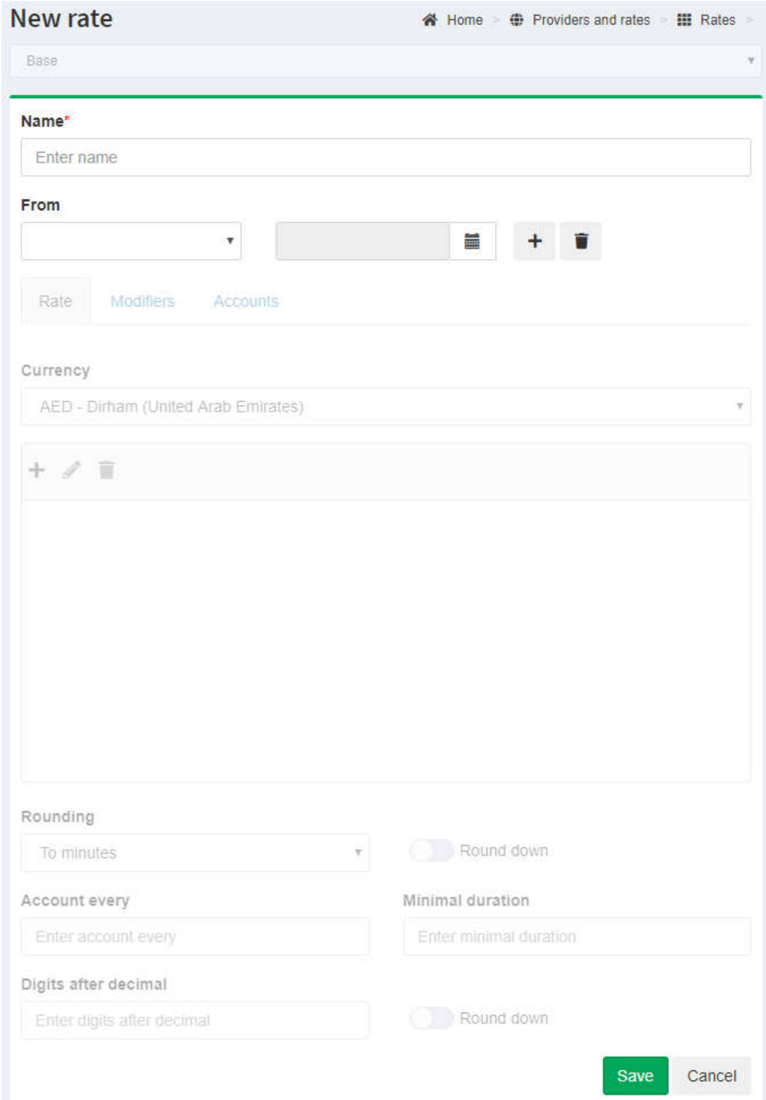


Figure 4.8.2

Click on the "+" button located to the right of the **From** calendar box. The current date is set as the first date of the rate. To change the date, click on the calendar button and choose the desired date.

<u>**You must correctly set the rate date**</u>, since if a call will have a date earlier than the rate date, the cost calculation of such a call will not be performed or performed incorrectly.

You can also add a new date to the existent rate. This allows to edit its parameters or type a new rate value, which will be used from a new date.

To change the rate date, click on the calendar button and select a new date.

To remove the rate date, click on the **Delete** button and then add a new date.

The **New rate** page includes three tabs: **Rate**, **Modifiers**, and **Accounts**.

The Rate tab

The **Rate** tab is used to type the main rate parameters.

In the **Currency** list, select the rate currency. The main currency that you set in the system is display by default.

A table of rate parameters contains at least one row if a rate value does not depend on the day type and time of day. In this case the values of the **Day type**, **Rate factor**, **From hour** and **To hour** columns are not edited. If a rate value depends on the day type and (or) time of day, you should add rows to the table with the appropriate parameters.

In the case where the rate value is applied for 1 minute, in the **Rounding** list, select the **To minutes** value. This is the default value. In this case, the second column of the rate table is called the **Rate per 60 s**. In that case, where the rate value is applied for 1 second, in the **Rounding** list, select the **To seconds**. In this case, the second column of the table is called the **Rate per 1 s**.

To type a rate value, select the desired row in the rate table, and click on the **Edit** icon in the toolbar. The **Edit modifier** window appears as shown in Figure 4.8.3.

If the rate period is 1 minute, enter a rate value in the **Rate per minute** box. The **Rate per s.** box will display the appropriate value.

If the rate period is 1 second, enter a rate value in the **Rate per s.** box. When you enter a value in this box, the value of the **Rate per minute** box is automatically recalculated.

In the case where this window is opened for the first row of the rate table, the following boxes are not edited: **Rate factor**, **From hour**, **To hour**, and **Day type**.

If the rate cost may not be less than a minimal specific value, you should type this value in the **Minimal call cost** box. All call costs that are less than this value will be rounded up to the value.

The **Rate factor**, **From hour**, **To hour**, and **Day type** boxes are available for editing only for the second and subsequent rows of the rate table (Figure 4.8.2). These parameters are used when a rate is changed in dependence of the time.

The **Rate factor** box allows to set a rate value using a factor with respect to the base value of the rate, i.e. the rate value that has been entered in the first row of the rate table. When you type a value in this box, the values of the **Rate per minute** and **Rate per 1 s.** boxes are automatically recalculated.

The **Hour from** and **To** boxes allows you to set the time range when the rate value is applied. You can enter only integer values of hours in these boxes.

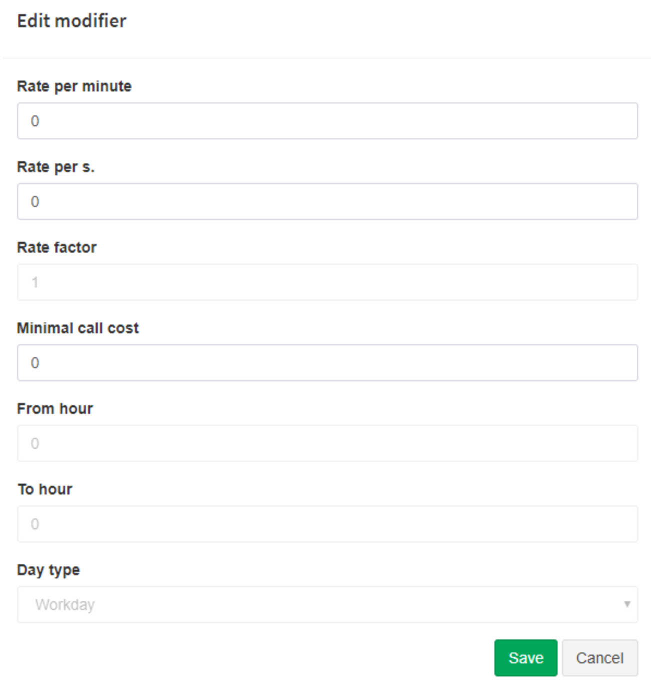


Figure 4.8.3

The **Day type** box specifies the type of the day for which the rate value is applied. Select from the following:

- Workday,
- Saturday,
- Sunday,
- Holiday.

After entering all data, click **Save**. A new row will be added in the rate table (Figure 4.8.2).

To add a rate for the specific type date or time period to the rate table click on the **Add** icon on the toolbar (Figure 4.8.2).

To edit a rate, select it in the rate table and click on the **Edit** icon on the toolbar.

To delete a rate for the specific type date or time period, select the rate and click on the **Delete** icon on the toolbar.

As described above, you may specify various options of the period of rounding. To do this, use the **Rounding** list (Figure 4.8.2), which contains the following options:

- **To minutes**. In this case, if the **Round down** switch is off, the call duration is rounded to minutes. For example, a call duration of 1 minute 8 seconds will be rounded to 2 minutes. Accordingly, when the **Round down** switch is on, the call duration of 1 minute 51 seconds will be rounded to 1 minute. Similarly, when using a rate for data, the received / transmitted data will be rounded to a megabyte.
- **Round to seconds**. A call duration is rounded to seconds.
- **Custom rounding**. If you select this option, the **Account every** box is active. In this box, you should specify the desired number of seconds to which a call duration will be rounded. For example, if rounding will be set to 6 seconds, the call duration of 13 seconds will be rounded to 18 seconds.

The **Minimal duration** box (Figure 4.8.2) allows you to specify a value to which all calls with duration less than this value will be rounded. For example, if you specify rounding to minutes and a value of the **Minimal duration** box is 2, then all calls less than 2 minutes will be calculated as calls with duration of 2 minutes.

To specify number of digits after decimal point in a call cost or traffic cost, use the **Digits after decimal** box.

If the **Round down** switch is off, the call cost will be rounded up. If the switch is on, the call cost will be rounded down.

If you do not need other rate settings, click **Save**. In the rate table (Figure 4.8.1), a new row appears.

The Modifiers tab

The **Modifiers** tab is shown in Figure 4.8.4.

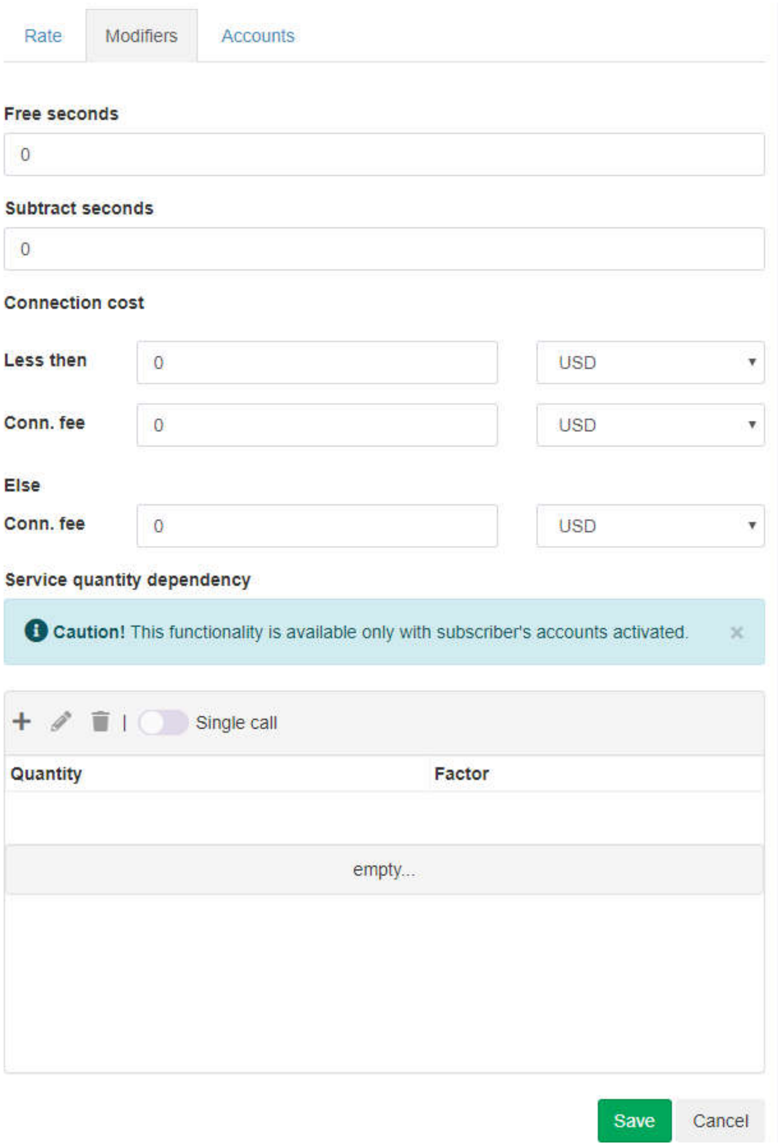


Figure 4.8.4

The **Modifiers** tab allows to modify the call cost in dependence of number of parameters.

The **Free seconds** box allows you to specify the number of call seconds, which will be taken into account in some situations. When a call duration is less than a value is specified in this box, the call duration shall be considered null. When a call duration is longer than the value, all call seconds will be accounted in the call duration.

The **Subtract seconds** box allows you to specify the number of call seconds that will be deducted from the call duration and the cost of these seconds will not be charged. For example, if you set value of 5 in the box, this means that a call duration of each call will reduce on 5 second before the call cost calculation.

In the **Connection costs** partition, you can set parameters which will change the call cost by adding a connection cost.

This setting is applied only to the Tariscope Provider edition.

In the **Less then** box, you can specify the value of the call cost, which affects the calculation of the connection cost value. If the call cost is less then this value, the connection cost value is applied from the **Conn. fee** box, which is located on the right from the **Less then** box. Otherwise, the connection cost value is applied from the **Conn. fee** box, which is located on the right from the **Else** position.

Tariscope allows to change a rate depending on the duration of each call or all calls for one month. This setting is specified in the **Service amount dependency** partition.

For example, the rate value of **X** should be applied to each call with duration to 600 seconds. If a call duration is in the range from 600 to 1200 seconds, you should apply the rate value of **Y.** Finally, the rate value of **Z** should be used for a call duration more than 1200 seconds. A similar approach can be applied to all calls for one calendar month. If the **Single call** switch is off, the rate modification defined in this partition will be applied to all calls for one calendar month. To specify parameters of the rate modification, click on the **Add** icon on the toolbar. As a result, the **New stage** window appears as shown in Figure 4.8.5.

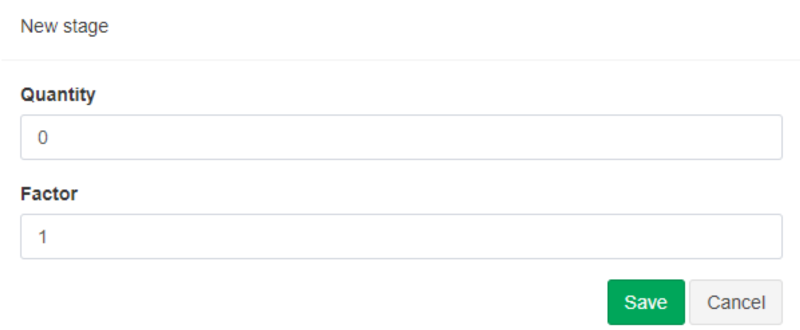


Figure 4.8.5

In the **Quantity** box, type a value of seconds to which will be applied the factor.

In the **Factor** box, type a factor value that is applied to the base rate.

Click **Save**. A new row with entered parameters will be displayed in the table (Figure 4.8.4).

Repeat the above steps to enter new parameters.

The entered data for the above example is shown in Figure 4.8.6, where the rate of **X** is calculated as the base rate, multiplied by the factor of 1, the rate of **Y** as the base rate, multiplied by the factor of 0.9, and the rate of **Z** as the base rate, multiplied by the factor of 0.7.

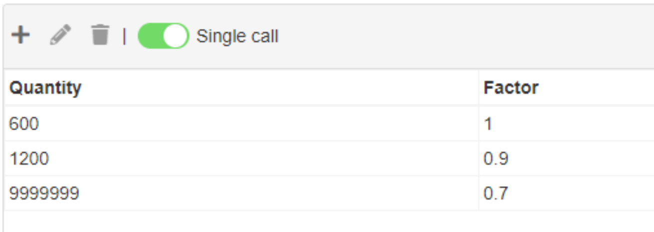


Figure 4.8.6

The Accounts tab

The **Accounts** tab is used to set the parameters associated with the charging of service cost to a customer's (subscriber's) account. This tab is used only for the Tariscope Provider edition. An example of this tab is shown in Figure 4.8.7.

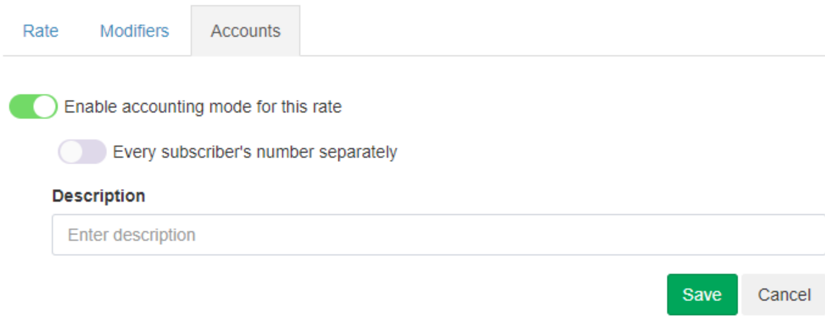


Figure 4.8.7

If the call costs with this rate are not required to charge to the customers' accounts, turn off the **Enable accounting mode for this rate** switch.

If a customer has multiple extensions / IP addresses and you want to perform the charging of call cost / IP traffic cost to each extension / IP address separately, turn on the **Every subscriber's number separately** switch. By default, the switch is off.

In the **Description** box you can type a text that will be used in the customer's account when charging the call cost is executed. Accordingly, this description will be used at formation of billing documents and reports. You can use the same description for some rates. For example, you have some international rates for different directions, but you want all calls to these directions keep in one record. To do this, you should enter, for example, the value of International in the **Description** box for all international rates.

When you have entered all the parameters of the rate, click **Save**. In the table of rates (Figure 4.8.1), a new line appears with the entered data.

The rate table (Figure 4.8.1) allows to perform actions, which are available from the toolbar or from the menu (it appears when click on the **Menu** icon on the toolbar):

- **Add**. The icon is used to create a new rate.
- **Copy.** Allows you to create a copy of a selected rate. It is recommended to use this action when you enter a rate that is not significantly different from the selected rate.
- **Edit.** Allows to edit the parameters of the selected rate.

- **Copy from plan.** This item is used when there are multiple rate plans (for the Tariscope Provider edition). Allows you to copy all parameters of the selected rate to another rate plan.
- **Delete.** Deletes the selected rate.
- **Show all date entered.** When you select this action, the rate table will be displayed all existing rates and also those which are inactive in the current time and was replaced by the new rates.
- **Set provider.** It allows you to bind the selected rate to the specific provider.
- **Clean dates.** Cleans dates and all data from the selected rate.
- **Multiple rates**. The item allows to multiply the selected rate values on the desired factor and save these changes in the rate.
- **Setting columns visibility**. If you click on the icon, a list of available columns to display in the rate table appears. You can check or clear the desired columns.
- **Export to file**. Allows you to export the rate table into the external file. Supports the following file format: Excel, HTML, CSV, and PDF.

4.9 Telecommunications service providers

This configuration page is used to configure data of telecommunications service providers to which your telephone system or Internet equipment is connected. On the page you can set call rates for different directions, bind the rates to area codes, and bind a provider rates to the specific route of your telephone system. The configuration page should be applied when the appropriate settings have not been entered at the Tariscope Initial configuration, or you need to enter parameters of other telecommunications providers.

Providers

The Tariscope installation package includes data of some providers. In order to determine whether is the data of the desired telecommunications provider in Tariscope, select in the menu **Providers and rates → Providers management**. The **Providers** page is displayed as shown in Figure 4.9.1.

In the right pane of the page, the table is displayed that contains a list of providers. Except of providers that are displayed in the table there is a possibility to import other providers from the SoftPI website. To get a list of providers from the website, click on the **Import online** icon on the toolbar. The **Providers for import** window appears as shown in Figure 4.9.2. If the window contains the required provider, select the row, and click **Start import**. The import may take several minutes. After the import, the desired provider is displayed on the **Providers** page (Figure 4.9.1).

If the desired provider is absent in the list, you should add it. To add a new provider, click on the **Add** icon on the toolbar (Figure 4.9.1). The **New provider** window appears as shown in Figure 4.9.3.

In the **Name** box, enter the provider name. In the **Description** box, you can add some description. This is optional information. Click **Save**.

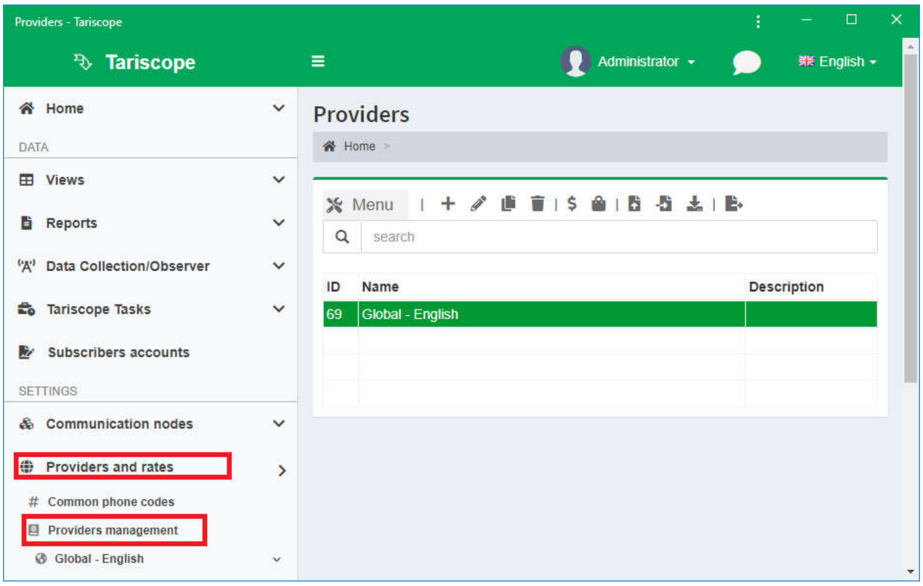


Figure 4.9.1

Figure 4.9.2

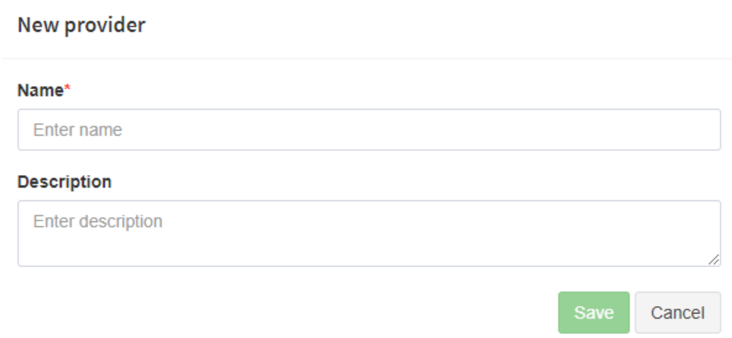


Figure 4.9.3

A new row appears in the providers table and the Tariscope menu. Select this menu item. The item contains the **Outgoing** and **Incoming** subbranches. Each of these subbranches contains the following configuration pages:

- **Destination codes**. The page allows you to assign a rate, category, and call type to the destination code.

- **IP networks**. The page allows you to assign a rate, category, and call type to the IP networks.
- **Day types**. If the provider rates have different values for different day types, you should specify such days.
- **Rates**. The page allows you to create, edit and delete rates.

If you do not need the provider data, you can remove it clicking the **Delete** icon on the toolbar.

When you have added a new provider, it contains destination codes from the Tariscope system. The list of codes is taken from the list of codes that you can see on the **Common phone codes** page. On this page you can add, edit, or delete an area code and its parameters.

In some cases, it is easier to add a new provider based on the provider's data contained in the Tariscope database than creating it from scratch. In this case, select a desired provider that will be a prototype, and click on the **Copy** icon on the toolbar. As a result, a copy of the selected provider will be created. Further, you can rename this provider and modify its parameters.

You can keep a provider data into the file. In the future, you can import this data into Tariscope if it will be required. To keep a provider data, select it in the provider list (Figure 4.9.1), and click on the **Export to file** icon on the toolbar. The file will be saved in the folder that is used to download in your browser.

Also, you can export the providers table into the external file. The following file formats are supported: Excel, HTML, CSV, and PDF. To do this, click on the **Export of the table** icon on the toolbar, and select the desired format. The file will be saved in the folder that is used to download in your browser.

Do not confuse copying provider data to a file and copying the provider table.

If you have the provider data that was previously exported to the file, you can import this information into Tariscope. To do this, click on the **Import from file** icon on the toolbar, and select the file. The file should have the **json** format.

After creating a new provider, execute the addition or correction parameters of the provider.

Destination codes and IP networks

Creation and editing of the area and county codes is executed if you select in the menu: **Providers and rates** → specific provider → **Outgoing** or **Incoming** → **Destination codes**.

Creation and editing of the IP networks is executed if you select in the menu: **Providers and rates** → specific provider → **Outgoing** or **Incoming** → **IP networks**.

Destination codes

This configuration page allows you to assign the rate, call type, and category to the specific destination code.

Select the **Destination codes** page. The page will be as shown in Figure 4.9.4.

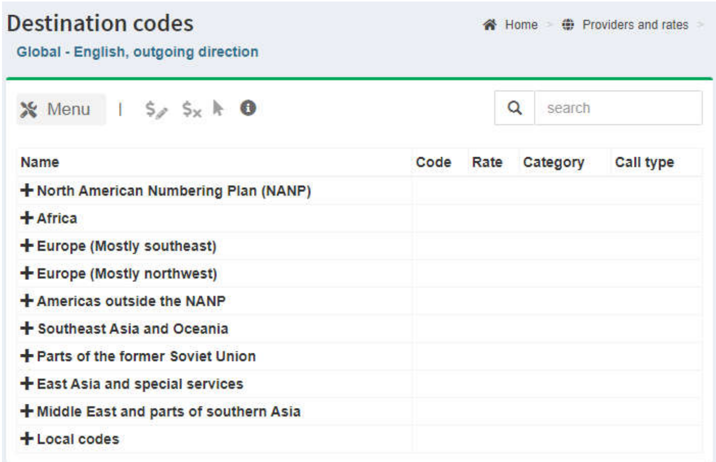


Figure 4.9.4

By default, all codes are grouped in a tree view. In this page you can perform the actions that are available using the **Menu** button or icons on the toolbar. There are available the next actions:

- **Edit**. Allows you to edit the following data of the selected row: rate, call type, and category.
- **Clean rate**. Allows you to remove previously assigned rate.
- **Deselect**. Allows you to deselect the selected rows.
- **Information**. Opens the help window contained information of how to find the desired codes.
- **Disable tree**. The switch allows you to turn on or turn off displaying the codes tree.
- **Multiselect**. The switch allows you to turn on or turn off selecting multiple rows in the table.

To search the desired code on the page, use the **Search** box.

You can set a rate and other parameters to the specific code or group of codes. To select a group of codes you should turn on the **Multiselect** switch and use the **Shift** or **Ctrl** buttons on the keyboard. Then, click on the **Edit** icon on the toolbar. The **Edit tariff for this code** window appears. An example of the window is shown in Figure 4.9.5.

In the **Rate** list, select the desired rate for the destination code. If there is no required rate, you should create it as it is described in the section 4.8.

In the **Category** list, you can select the desired call category for the code. This parameter can be used to filter calls, create reports, or to set restriction to make calls to this code.

In the **Call type** list, select the desired call type, if you do not like that call type that are assigned to the code in Tariscope by default. For example, you have offices in two cities, and you want to assign the corporate call type for calls between these offices.

If you selected the node element of the code tree and want that your settings are applied to all codes of the node, you should turn on the **Apply also to nested codes** switch.

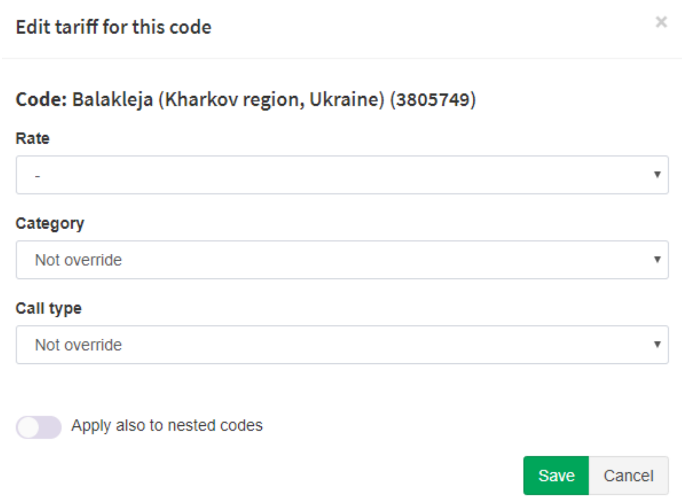


Figure 4.9.5

Click **Save**.

If there is no required destination code in the Tariscope database, you can add it. It may be an area code, country code or specific phone number. To do this, you should go to the **Common phone codes** page.

IP networks

This configuration page allows you to create IP network and assign the desired rate and category to it. An example of the **IP networks** page is shown in Figure 4.9.6.

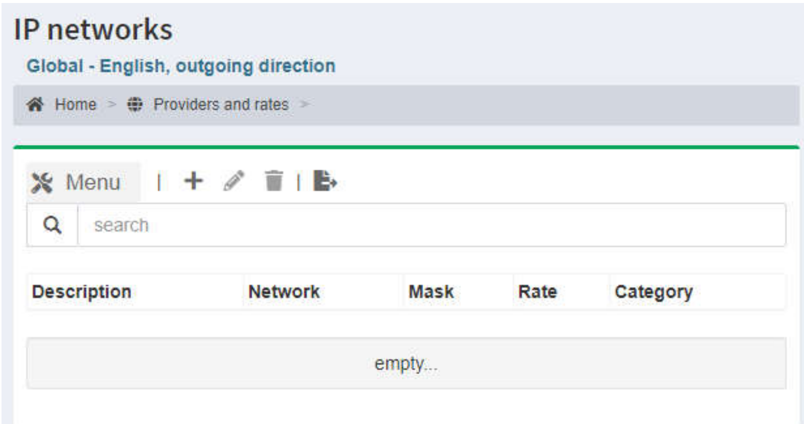


Figure 4.9.6

The toolbar of the page contains the **Menu** button and the following icons:

- **Add**. Allows you to add the data of a new IP network.
- **Edit**. Allows you to edit the data of the selected IP network.
- **Delete**. Allows you to delete the selected network.
- **Export of the table**. Allows you to export the table to the external file of the following formats: Excel, HTML, CSV, PDF.

To add a new IP network, click on the **Add** icon. The **New IP network** window appears as shown in Figure 4.9.7.

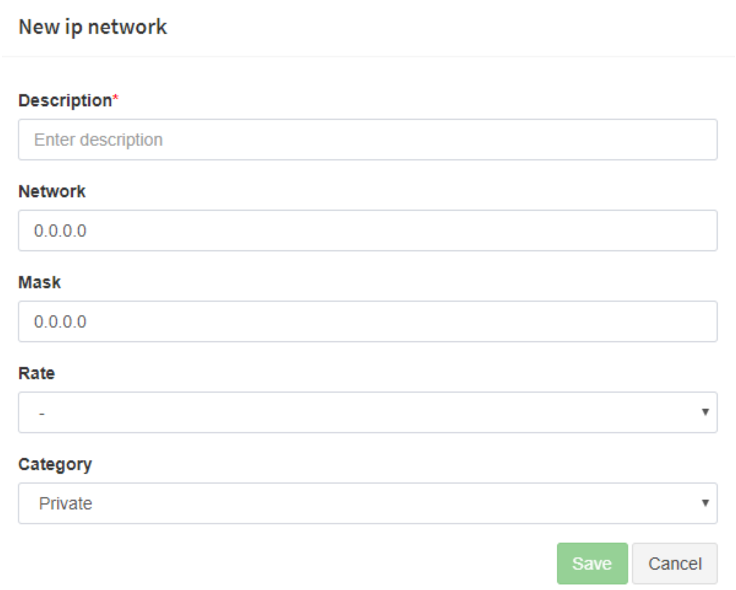


Figure 4.9.7

In the **Description** box, enter the IP network name.
In the **Network** box, enter an IP address of the network.
In the **Mask** box, enter a subnet mask.
In the **Rate** list, select the desired rate.
In the **Category** list, select the desired category if you want to filter or create reports using the category.
Click **Save**.

Day types

The **Day types** configuration page is used if the rates have different values for different day types. If the rates do not depend on the day type, you do not need to use the configuration page. An example of the page is shown in the Figure 4.9.8.

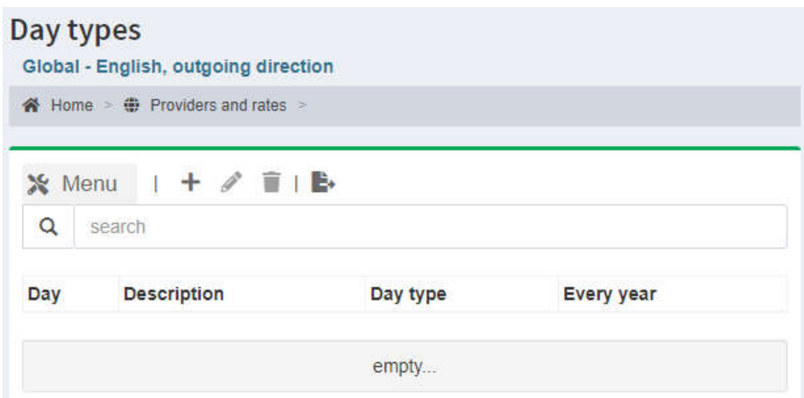


Figure 4.9.8

The toolbar of the page contains the **Menu** button and the following icons:

- **Add**. Allows you to add a day type.
- **Edit**. Allows you to edit the selected day type.
- **Delete**. Allows you to delete the selected day type.

- **Export of the table**. Allows you to export the table to the external file of the following formats: Excel, HTML, CSV, PDF.

To add a new day type, click on the **Add** icon. The **New day type** window appears as shown in Figure 4.9.9.

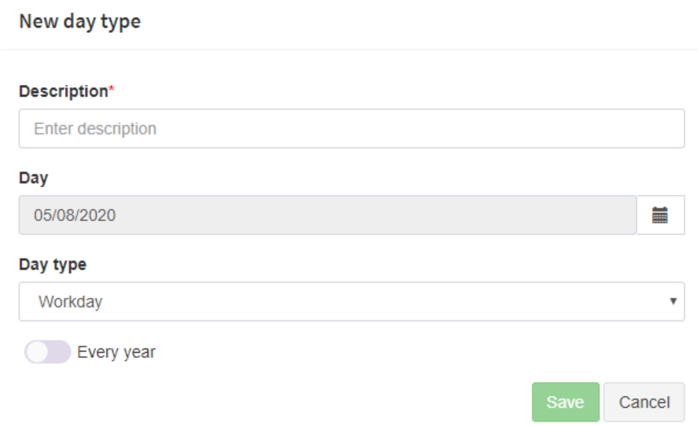


Figure 4.9.9

In the **Description** box, enter the day type name.
In the **Day** calendar box, select the desired date.
In the **Day type** list, select the desired day type. The list contains the following options:

- Workday.
- Saturday.
- Sunday.
- Holiday.

If this day type should be applied every year, turn on the **Every year** switch.
Click **Save**.

Rates

This configuration page is described in the section 4.8.

Common phone codes

The **Common phone codes** page is used to modify a list of destination codes that are applied for all telecommunications providers in Tariscope. If you have selected the item in the Tariscope menu, the **Common phone codes** page appears as shown in Figure 4.9.10.
The toolbar of the page contains the icons and the **Menu** button that duplicates the icons.

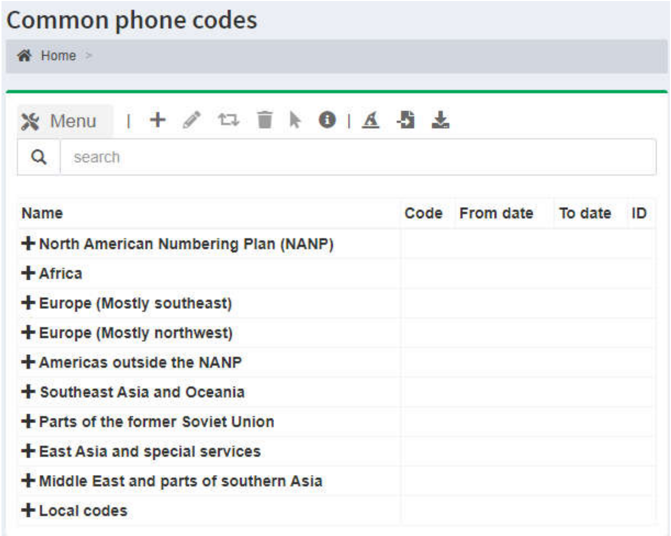


Figure 4.9.10

There are accessible the following icons:

- **Add**. Allows you to add a new phone code.
- **Edit**. Allows you to edit the selected code.
- **Move**. Allows you to move the selected code to another branch of the tree.
- **Delete**. Allows you to delete the selected code.
- **Deselect**. Allows you to deselect the selected codes.
- **Information**. Opens the help window contained information of how to find the desired codes.
- **Import wizard**. Starts the wizard that import codes, destination name, and rates from the external sources into the Tariscope database.
- **Import from the file**. The option is used if Tariscope does not have access to internet and you received the file with codes from SoftPI by email or another way.
- **Import online**. Allows to import the detailed codes list for the specific country or all countries from the Tariscope site.

  Excluding these icons, the menu contains two switches.
- **Disable tree**. The switch allows you to turn on or turn off displaying the codes tree.
- **Multiselect**. The switch allows you to turn on or turn off selecting multiple rows in the table.

By default, Tariscope includes only the main phone codes. To get all codes of the desired country or all codes, click on the **Import online** icon on the toolbar. The **Import options** window appears as shown in Figure 4.9.11.

If you want also to import codes of mobile provides, turn on the **Include providers** switch. Otherwise, Tariscope imports the countries and area codes only.

If you wish to import the code descriptions with information about the country, turn on the **Include country name** switch.

You can select for the import all countries or only the desired countries.

To select all countries, turn on the **Select all** switch.

To select the desired country, turn on the switch near the country name.

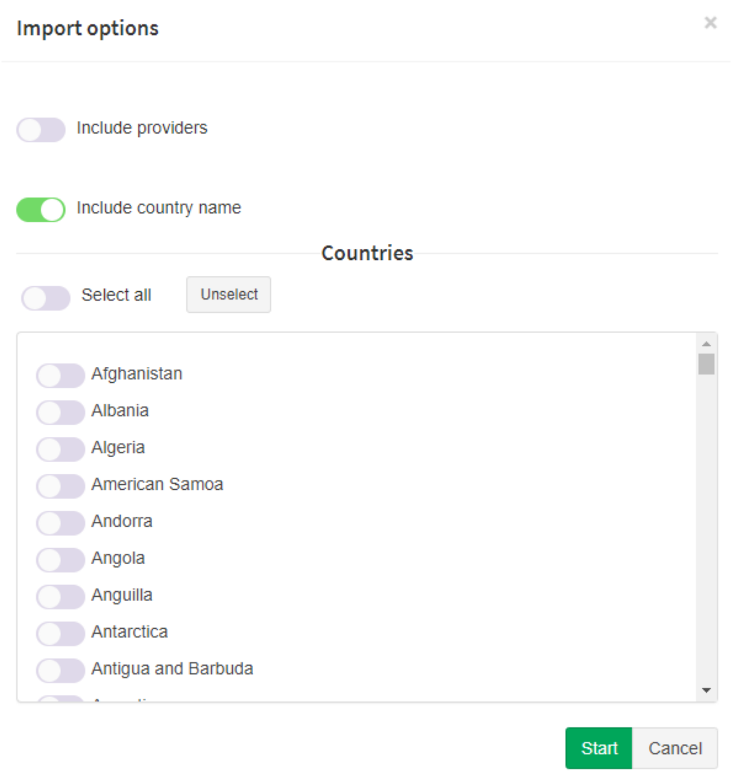


Figure 4.9.11

To clear all your choices, click on the **Unselect** button.
You should understand that the choice of all countries may take a long time.
Click on the **Start** button to start the import.

Another way to fill the Tariscope database is the import of codes from the external file. Click on the **Import wizard** icon on the toolbar. The **Import wizard** page appears as shown in Figure 4.9.12.

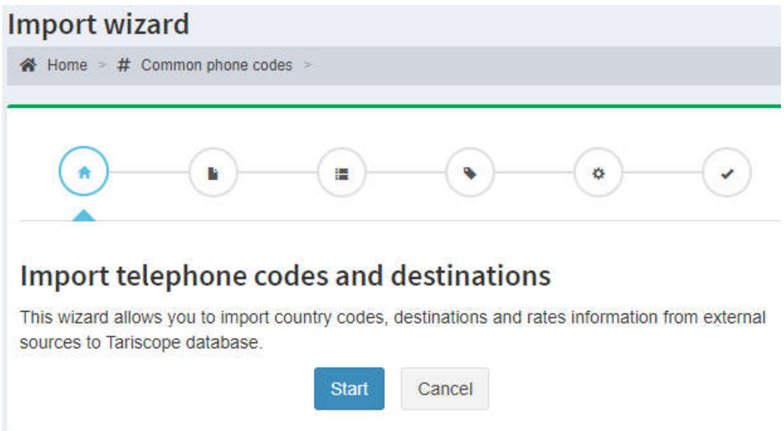


Figure 4.9.12

Click **Start**.
The page will look as shown in Figure 4.9.13.
In the **File type** list, select the file type that contains codes. The following file types are supported:

- Microsoft Excel 2007 (.xlsx).
- Microsoft Excel 2003 (.xls).

- Microsoft Access (.mdb).
- Microsoft Access 2007 (.accdb).
- Comma separated (.csv).
- Text (.txt).
- dBase III (.dbf).

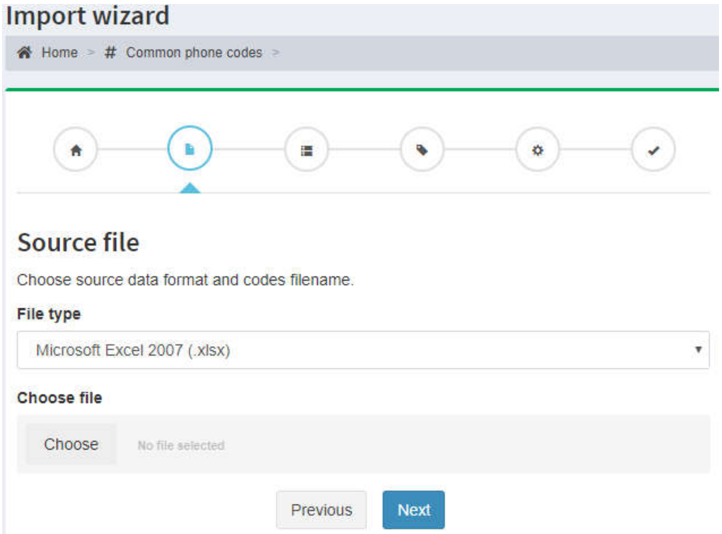


Figure 4.9.13

Click on the **Choose** button and select the desired file.

Click **Next**. If you have selected, for example the xlsx file, the page will look as shown in Figure 4.9.14.

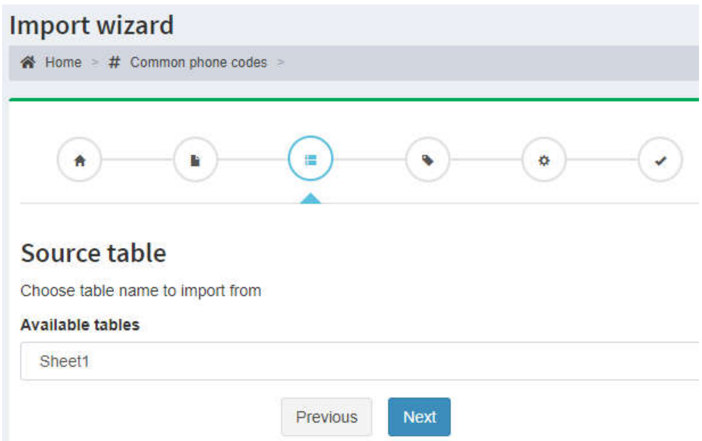


Figure 4.9.14

The **Available tables** list contains a list of the available sheets in the file. Select the required sheet and click **Next**. An example of the page is shown in Figure 4.9.15.

The **Fields** section contains a list of parameters which you can import into the Tariscope database. It includes the following fields:

- **Code**. A country, area, or phone code.
- **Name**. A code description.
- **Rate name**. A rate name that is associated with the code.
- **Rate**. A rate associated with the code.
- **Call type**. A call type associated with the code.

- **Category**. A category associated with the code.
- **From date**. The date from which the code is applied.
- **To date**. The date to which the code is applied.
- **Rate direction**. It shows that the code is applied to outgoing or incoming calls.

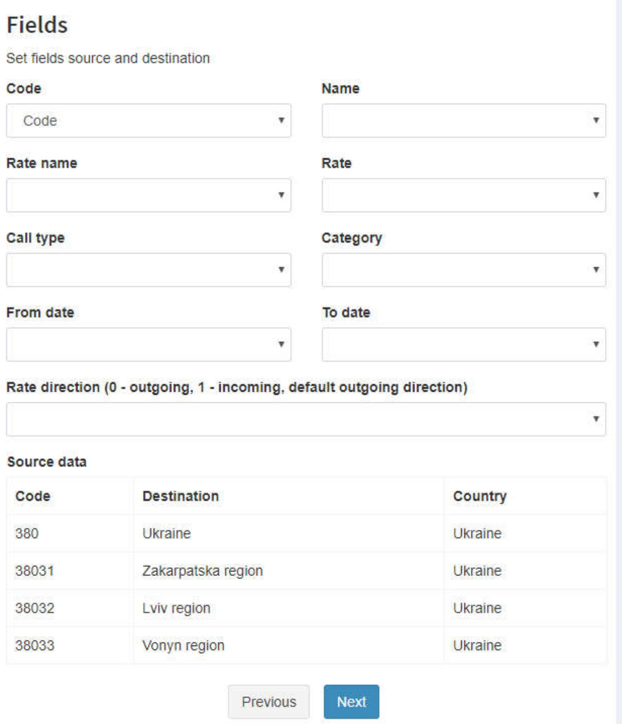


Figure 4.9.15

The **Source data** section displays fields of the file. In each list of the **Fields** section, you should choose the field from the file that corresponds to the list name. For example, for current example you should select the **Code** name in the **Code** list and the **Description** name in the **Name** list.

Click **Next**. The wizard page will look as shown in Figure 4.9.16.

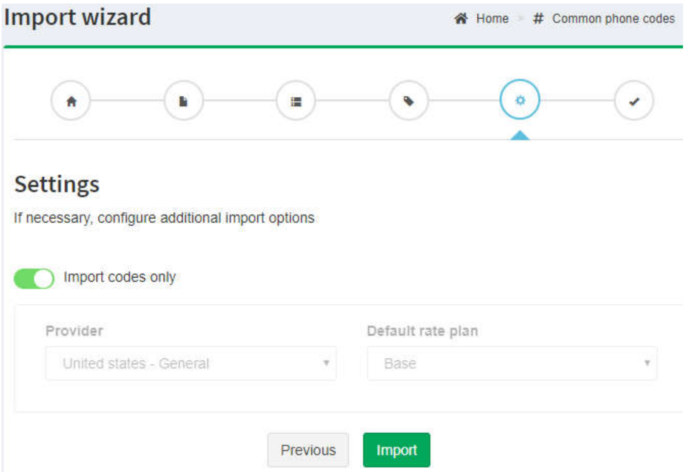


Figure 4.9.16

If your external file contains the rates data that you wish to import together with codes, turn off the **Import codes only** switch. The **Provider** and **Default rate plan** list become active. In the **Provider** list, select the provider for which the rates import will be executed. In the **Default rate plan**, select the default rate plan name.

Click **Import**. The import will be executed.

If your Tariscope server does not connect to the internet to import the destination codes, you should contact the SoftPI Support Team. They can send you the file with the codes. In this case, to import the code to the Tariscope, click on the **Import from file** icon on the toolbar (Figure 4.9.10) and select the file.

If you have found that the required code is absent in the Tariscope database after any option of the import, you can add a new code manually.

To add a new code, click on the **Add** icon. The **Add new phone code** window appears as shown in Figure 4.9.17.

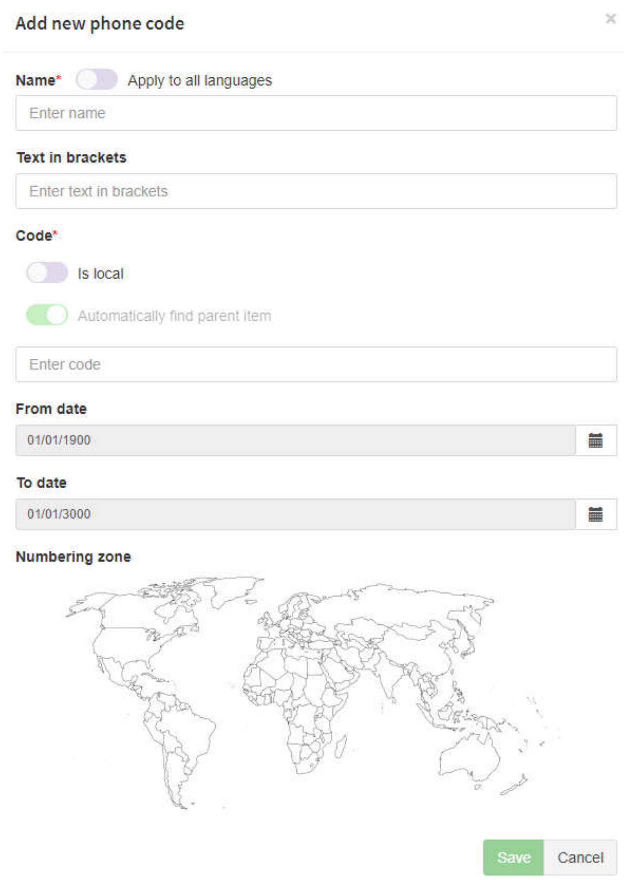


Figure 4.9.17

If you are planning to use Tariscope on different languages, turn on the **Apply to all languages** switch.

In the **Name** box, enter the description for the phone code. It may be a city name, mobile operator name, name of a company, or others.

If in the **Name** box you have entered the city name, you can specify a country name and region, where the city is. Enter this information in the **Text in brackets** box.

If you need to add a phone code from your city, turn on the **Is local** switch.

If you want that Tariscope automatically find the parent item, turn on the **Automatically find parent item** switch. Otherwise, the new code will add as a subbranch of the previously selected item.

In the **Enter code** box, enter the required code. The code should at least include the country code for the country; the country code and area code for the destination such as a city, town etc. The area where the entered code is applied is display on the map of the **Numbering zone** section.

In the **From date** calendar box, you can specify the date from which the code will be applied.

In the **To date** calendar box, you can specify the date to which the code will be applied.

Click **Save**.

Moving a code to another branch

If you need to move a code from one branch to another, you should select the desired code and click on the **Move** icon on the toolbar. The **Move** window appears as shown in Figure 4.9.18.

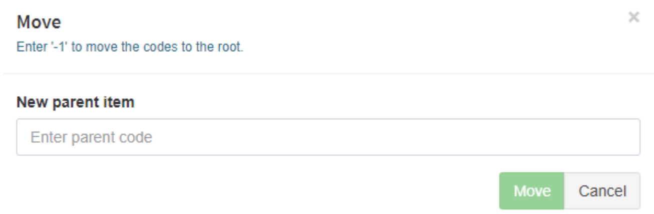


Figure 4.9.18

In the **New parent item** box, enter the code of the new parent and click **Move**.

4.10. Telecommunications node

In Tariscope the subscribers (customers) belong to a specific telecommunications node, which can contain some telephone systems or routers. A subscriber can have some extensions (phone numbers) or IP addresses of any telecommunication equipment that is part of a particular telecommunication node.

To manage telecommunications nodes, choose **Communication nodes → Node management** in the Tariscope menu. If you did not create the node during the Tariscope initial configuration, the **Node management** page will be as shown in Figure 4.10.1.

The page contains a toolbar that includes the following icons:

- **Add**. Allows you to create a new telecommunications node.
- **Rename**. Allows you to rename the selected node.
- **Edit**. Moves on the **Equipment** page.
- **Delete**. Allows you to delete the selected node.
- **Export of the table**. Allows you to export the node table to a file of the following format: Excel, HTML, CSV, or PDF.

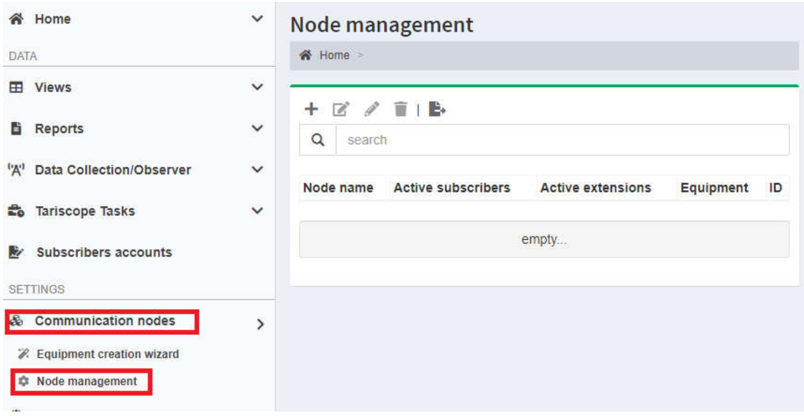


Figure 4.10.1

To create a new telecommunications node, click on the **Add** icon. The **New node** window appears as shown in Figure 4.10.2.

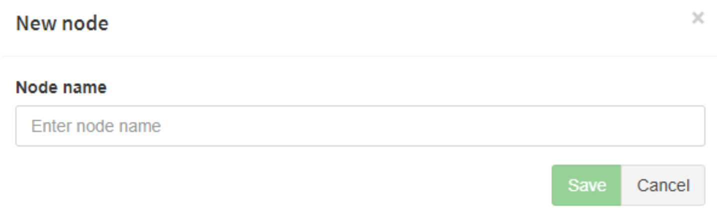


Figure 4.10.2

In the **Node name** box, enter the node name. For example, it can be your company name. Click **Save**. The new row with this name appears in the node table (Figure 4.10.1). The node name is displayed in the **Node name** column of the table. The **Active subscribers** column displays the number of active subscribers in the node. After the node creation it displays 0. The **Active extensions** displays the number of subscribers' extensions entered in the system for the node. The **Equipment** column displays the number of telephone systems or routers that the node contains. The **ID** column displays the node identifier.

4.11. Adding a new telephone system

Entering the parameters of the new telephone system is a step in the telecommunications node configuration.

When you create a new telecommunications node, the new equipment (a new telephone system) is automatically created. To edit its parameters, select in the Tariscope menu **Communication nodes** → your node → **Equipment** → **New equipment** → **Settings**. Or you can select the desired node on the **Node management** page (Figure 4.10.1) and click on the **Edit** icon on the toolbar. The **Equipment** page appears. Select the **New** equipment row in the table of the page and click on the **Edit** icon on the toolbar. The **Edit New equipment** page appears as shown in Figure 4.11.1.

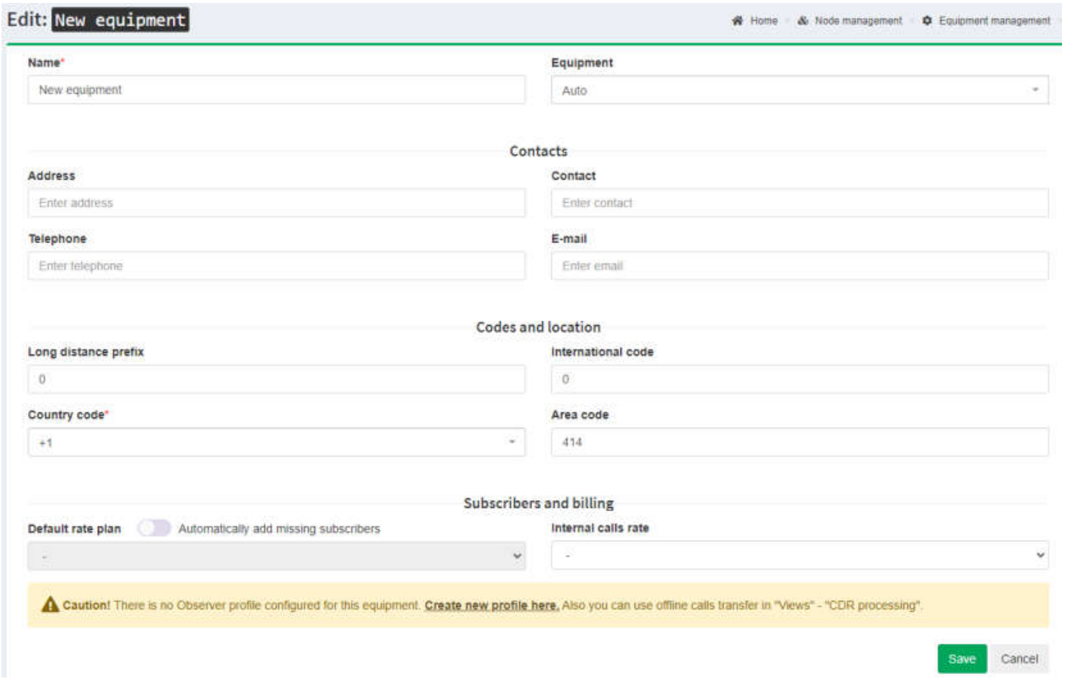


Figure 4.11.1

In the **Name** box, change the **New equipment** name on any other name. For example, it can be your telephone system name.

In the **Equipment type** list select your telephone system type. To quickly find the desired name, use the **Search** line. The list contains the following telephone systems and data equipment:

- 3CX Phone System,
- Aastra MX, Aastra MX-One, Aastra (Ericsson) MD-110,
- Alcatel OmniPCX Enterprise, OmniPCX 4400, OXE,
- Alcatel OmniPCX Office,
- Avaya Session Border Controller for Enterprise,
- Asterisk, Fonality Trixbox,
- Audio Codes Mediant 800B/1000B Gateway & E-SBC,
- Auto, Automatic equipment selection,
- Avaya Aura, S8800, S8730, S8710, S8700, S8500, S8400, S8300, Definity,
- Avaya IP Office,
- Avaya Aura Session Manager,
- Cisco Unified Communications Manager (CUCM),
- Cisco CallManager Express (CME),
- Cisco PGW 2200,
- Coral FlexiCom,
- Empty parser,
- Epygi QX1000,
- Ericsson Business Phone 250,
- Erricsson MD110,
- Farlep F-1500,
- Grandstream UCM6100, UCM6510,
- Informtekhnika Minicom DX-500,

- Iskratel SI3000, SI2000,
- Karel DS200,
- Kvant,
- LG GHX-46,
- LG LDK 100/300, LG iPECS-MG,
- LG-Ericsson iPECS-LIK,
- M-200,
- MfiSoft RTU,
- Microsoft Lync 2013,
- Mitel 3300, SX2000,
- NEC NEAX 2000, NEAX 2400 IMS, UNIVERGE SV8100/8300,
- NetFlow sensor (Cisco NetFloq v.5/v.9, IPFIX, rFlow),
- Avaya (Nortel) Meridian 1 / Communication Server 1000, Norstar (SL1),
- Nortel Norstar / BCM (Norstar format),
- Panasonic KX-xxx, KX-TD, KX-TDA,
- Platon PBX Server Libra,
- Profinfotech Billion Softswitch,
- Rustelcom Elcom,
- Rus Tex AGAT UX,
- Samsung iDCS500 / OfficeServ,
- SAP BCM,
- Siemens HiPath 4000,
- Siemens HiPath / HiCom,
- Telsystems Oktell,
- Unify OpenScape Office V3MX/LX, Voice v5-v9,
- Wyatts DK2000, Reuters Voice Systems DK2000/SNX/MRX digital.

The selected equipment type will be displayed in the **Equipment type** box (Figure 4.11.1).

Click on the **Advanced settings** button. The different windows can appear in dependence on the telephone system type. Next, we consider the features of settings for each telephone system.

Now we return to other settings of telephone system that are shown in Figure 4.11.1.

The **Contacts** section of the page contains the following boxes:

- **Address**. It is used to enter address where the telephone system is located. This is the optional parameter.
- **Contact**. This box is intended to type a name and surname of the person who is responsible for this telephone system. This is the optional parameter.
- **Telephone**. This box is intended to type a telephone number of the person who is responsible for this telephone system. This is the optional parameter.
- **E-mail**. This box is intended to type an email address of the person who is responsible for this telephone system. This is the optional parameter.

The **Codes and location** section of the page contains the following boxes:

- **Long distance prefix**. The Long distance prefix is a prefix that allows to make telephone call outside a specific local area, usually to another city. In most countries it is equal 0. If this prefix is another, change it.
- **International code**. The International code is a prefix that allows to make call from your country to another country. In most countries it is equal 0. If this prefix is another, change it.
- **Country code**. The Country code is a numeric code which allows to make call to a specific country or area. Select your country code.
- **Area code**. Enter your area code.

The **Long distance prefix** and **International code** affect the correct recognition of long-distance and international calls in the dialed number, and consequently on their rating.

The **Subscribers and billing** section of the page contains the following settings:

- **Automatically add missing subscribers**. If the switch is on, this allows to automatically add subscribers into the Tariscope database during the CDR processing, when the subscribers are absent in the database. The system automatically assigns subscriber's name using subscriber's extension number and the 'a' prefix. For example, the subscriber with the name of a.7777 will be added to the Tariscope database when Tariscope processes a call made from the extension of 7777. The Tariscope administrator can change these code names on the real names later. Calls from the phone numbers that do not belong to any subscriber will not be rated.
- The **Default plan** list becomes active only when the **Automatically add missing subscribers** switch is on. In this case, select the desired rate plan for automatically created subscribers. If the plan is not selected, calls from these subscribers will not be rated.
- The **Internal calls rate** list is applied if you want to rate internal calls. In this case, select the desired rate. If the desired rate is absent, you should create it.

If you have not created a profile to get CDR from your telephone system, the prompt in the bottom of the page displays an offer to create this profile.

Click on the **Save** button to keep the settings and then go to the other configuration pages.

If Tariscope is used to simultaneously process information from multiple telephone systems, the steps above should be performed for each of them.

To create a new telephone system in Tariscope, you can use the **Equipment creation wizard** mode. We will consider it further.

4.11.1. Settings for 3CX

If you have selected the **3CX Phone System** item in the **Equipment** list (Figure 4.11.1), click on the **Advance settings** button located to the right of the **Equipment** list. The **Advanced settings** window appears as shown in Figure 4.11.1.1.

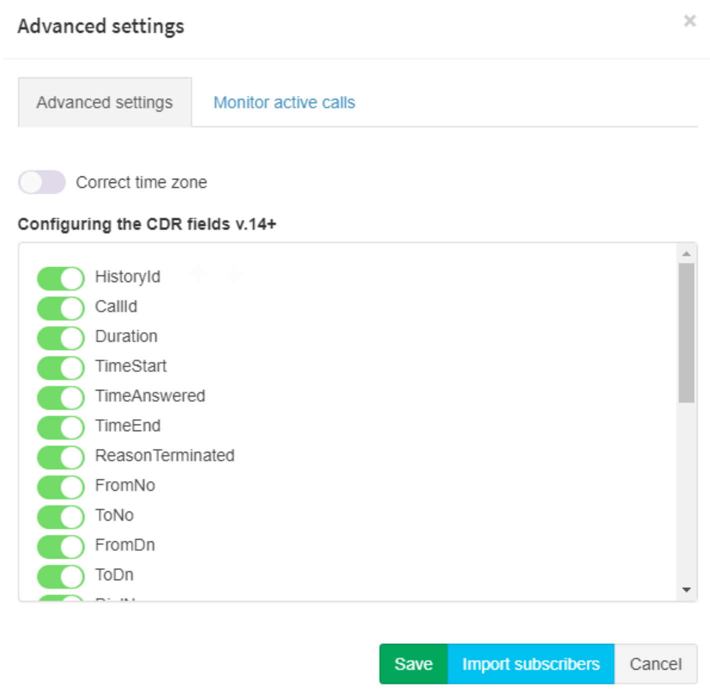


Figure 4.11.1.1

If you have 3CX version 6-12, skip this configuration. Tariscope automatically defines CDR format for these versions.

If your 3CX uses time of UTC + 0 in CDR, but you are in another time zone, to change the time zone in call data, turn on the **Correct time zone** switch.

The **Configuring the CDR fields v.14+** list contains all CDR fields. The switches are on for the fields that are used by default in 3CX. If you need specific CDR fields turn on or turn off the corresponding switches.

If you want to collect CDR data in the real time, click on the **Monitor active calls** tab. The **Advanced settings** window will be as shown in Figure 4.11.1.2.

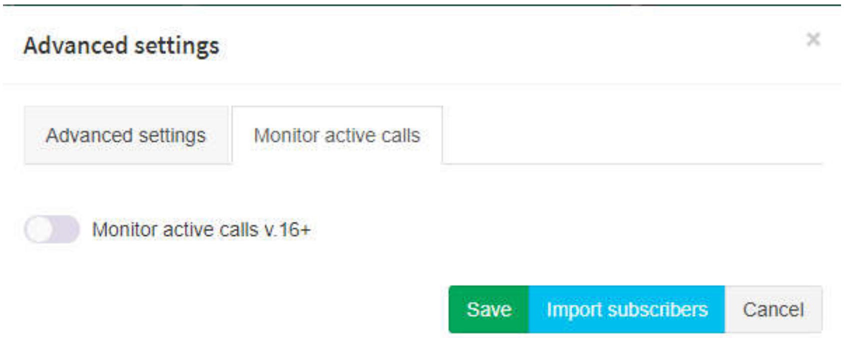


Figure 4.11.1.2

Turn on the **Monitor active calls v.16+** switch. On the window appears settings that are shown in Figure 4.11.1.3. CDR data from 3CX do not contain all information about participants of a transfer call. If you want to have information about all stages of the call, enter URL of 3CX in the **FQDN** box.

In the **Port** box, enter the IP port of 3CX.

In the **Login** box, enter an administrator login to 3CX and in the **Password** box, enter the password. The use of these settings allows you also to create the specific reports about 3CX work.

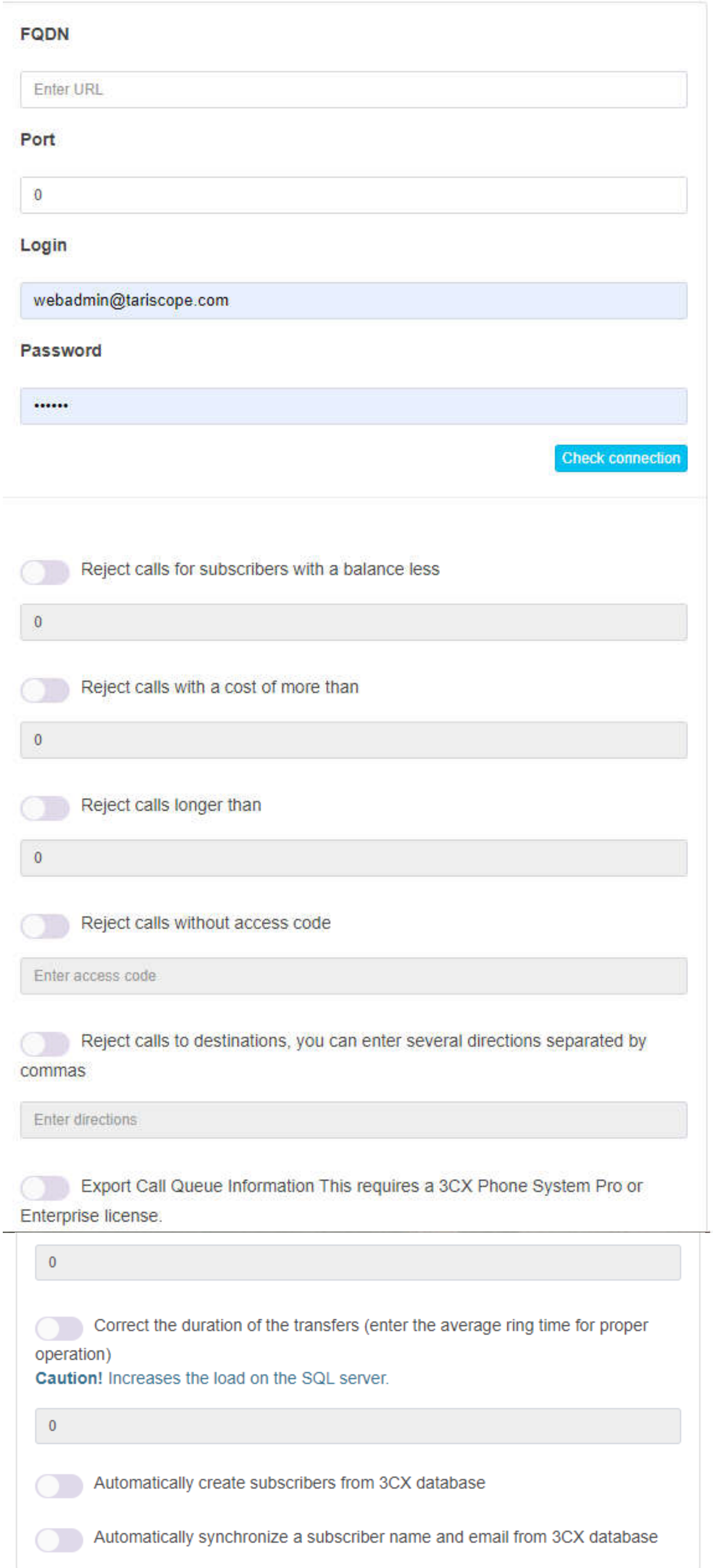


Figure 4.11.1.3

Click on the **Check connection** button to check if the entered parameters are correct.

If you use the Tariscope Provider edition and you want to restrict calls for customers with a balance less than the specific value, turn on the **Reject calls for**

subscribers with a balance switch and enter the balance limit value. This setting is not applied to the Tariscope Enterprise edition. The feature works if the Tariscope license includes the restriction feature.

If you want to restrict calls with costs of more than the specific value, turn on the **Reject calls with a cost of more than** switch, and enter the value. The feature works if the Tariscope license includes the restriction feature.

If you want to restrict calls with a duration of more than the specific value, turn on the **Reject calls longer that** switch, and enter the duration limit value. The feature works if the Tariscope license includes the restriction feature.

If you want to forbid calls without the access code, turn on the **Reject calls without access code** switch, and type the access code.

If you want to restrict calls to specific destinations, you should turn on the **Reject calls to destinations, you can enter several directions separated by commas** switch, and enter the destination codes.

If you use the 3CX with the 3CX Phone System Pro or Enterprise license and you want to create specific reports on 3CX queues, turn on the **Export Call Queue Information** switch, and type queue numbers. To use this feature, you need to have the connection to the 3CX database.

3CX CDR data do not contain a ring time for transfer calls, therefore a call duration of such calls includes the ring time. If you want to have more correct information about the call duration, turn on the **Correct the duration of the transfers** switch, and type the average ring time for the calls.

Tariscope provides feature to automatically create subscriber's information in the Tariscope database when the processing of information about calls is executed and if the subscriber who made the call is absent in the database. In this case, Tariscope gets subscriber's information from the 3CX database. To implement this feature, turn on the **Automatically create subscribers from 3CX database** switch.

Tariscope allows to automatically synchronize the subscriber's information such as a subscriber name, extension, and email address with the 3CX database. To implement this feature, turn on the **Automatically synchronize a subscriber name, extension, and email from 3CX database** switch.

Tariscope allows you to import subscribers’ information from the 3CX database to the Tariscope database. To do this, click on the **Import subscribers** button.

To keep settings of the window, click on the **Save** button.

4.11.2. Settings for Aastra MX-ONE and Aastra MD110

If you have selected the **Aastra MX-ONE and Aastra MD110** item in the **Equipment** list (Figure 4.11.1), click on the **Advance settings** button located to the right of the **Equipment** list. The **Advanced settings** window appears as shown in Figure 4.11.2.1.

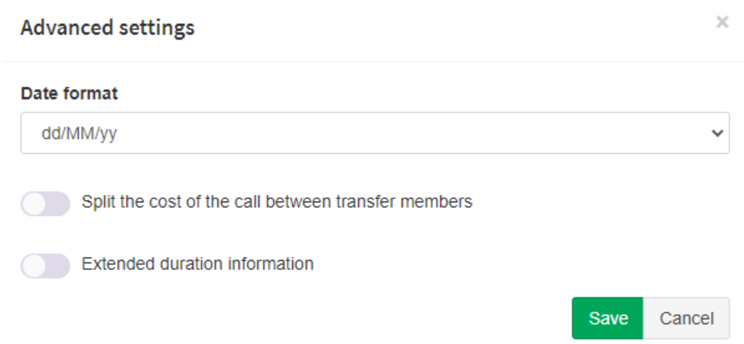


Figure 4.11.2.1

The window allows to select the required date format. Select it from the **Data format** list.

When processing a call transfer, by default, Tariscope charges a total cost of the call on a subscriber who made the call transfer. If you wish to divide the call cost between subscribers who took part in the call, turn on the **Split the cost of the call between transfer members** switch.

If you want to have the extended duration information for a call, turn on the **Extended duration information** switch.

To keep the settings, click on the **Save** button.

4.11.3. Settings for Alcatel OmniPCX Enterprise

If you have selected the **Alcatel OmniPCX Enterprise** item in the **Equipment** list (Figure 4.11.1), click on the **Advanced settings** button located to the right of the **Equipment** list. The **Advanced settings** window appears as shown in Figure 4.11.3.1.

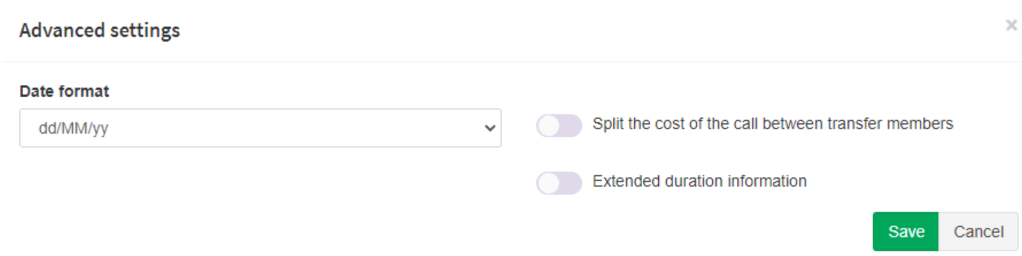


Figure 4.11.3.1

When processing a call transfer, by default, Tariscope charges a total cost of the call on a subscriber who made the call transfer. If you wish to divide the call cost between subscribers who took part in the call, turn on the **Split the cost of the call between transfer members** switch.

If you want to have the extended duration information for a call, turn on the **Extended duration information** switch.

To keep the settings, click on the **Save** button.

4.11.4. Settings for Alcatel OmniPCX Office

If you have selected the **Alcatel OmniPCX Office** item in the **Equipment** list (Figure 4.11.1), click on the **Advanced settings** button located to the right of the **Equipment** list. The **Advanced settings** window appears as shown in Figure 4.11.4.1.

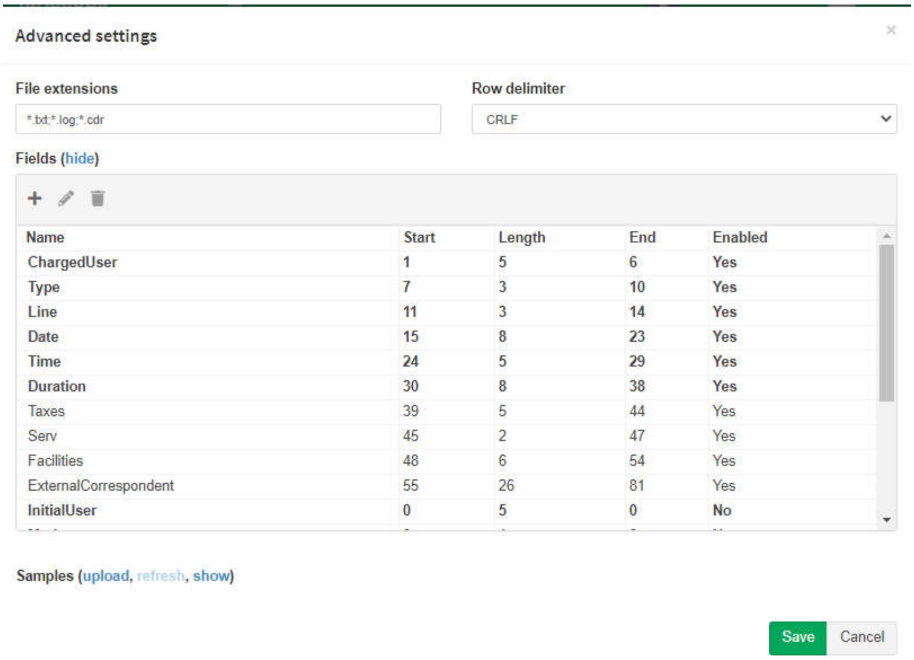


Figure 4.11.4.1

The window allows to select fields and their order in which they were specified in PBX.

The window contains:

- The **File extensions** box. It contains a list of extensions of CDR files. By default, the TXT, LOG and CDR extensions are offered.
- The **Row Delimiter** list allows you to select the row delimiter that is used in your PBX.

There is a table with columns:

- **Name**. Displays field names that are used for configuration.
- **Start**. Displays a start position of the field.
- **Length**. Displays a field length in characters.
- **End**. Displays a position of the end character of the field.
- **Enabled**. A sign of use this field in CDR format.
- **Description**. A brief description of the field.

To change field settings, select the desired row and click on the **Edit** icon on the toolbar. The **Advanced settings** window changes its contents. An example of the window is shown in Figure 4.11.4.2.

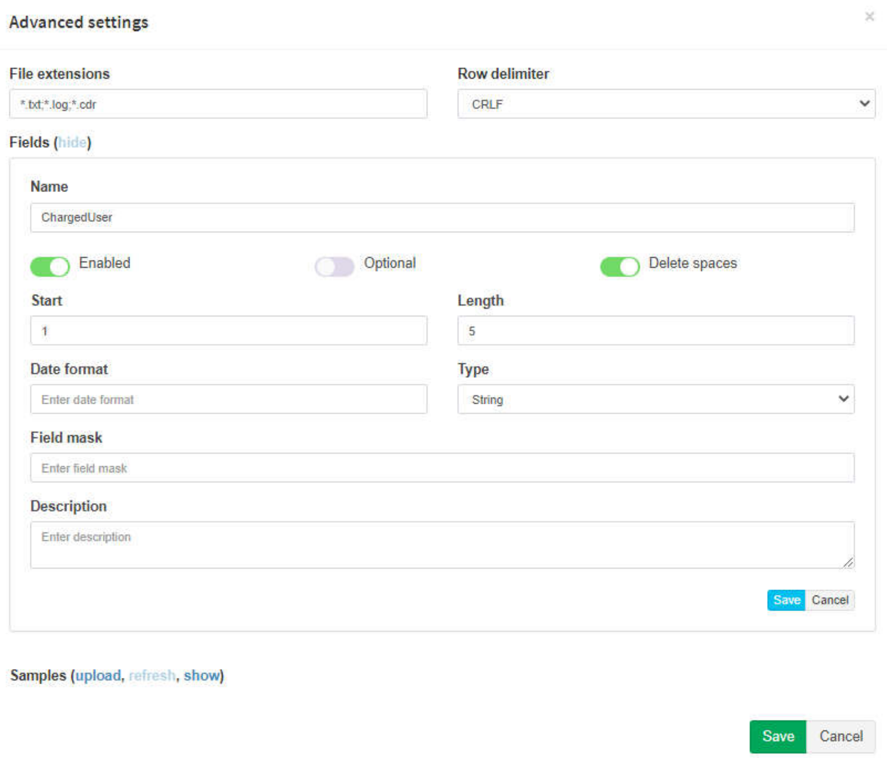


Figure 4.11.4.2

In the **Name** box the field name is displayed that is used in Alcatel documentation. If you wish, you can change it.

If Tariscope must process this field, turn on the **Enabled** switch.

If the original string of CDR data needs to be processed only if it contains this field, turn on the **Optional** switch. If this switch is on, but the field is absent, the CDR string will be processed, but this field will be blank. The required fields for processing are shown in bold in the table.

To correct process CDR, Tariscope must delete spaces in CDR. By default, the **Delete spaces** switch is on. Do not turn off the switch.

The **Start** box displays a start position of the field. You can change the value.

The **Length** box displays the field length. You can change the value.

The **Date format** box allows to specify format for the field. It can apply, for example, for the **Date** field, where you should specify a date format that is used in CDR.

The **Type** list allows you to choose the required data type.

The **Filed mask** box is used to verify the correctness of the field settings. You can type a regular expression in the box.

The **Description** box allows you to enter the field description.

To save parameters of the field, click **Save**.

Check on the settings for all fields. If you have an example of CDR file, to verify the configuration parameters of CDR format, click on the **upload** link (Figure 4.11.4.1), and select the CDR file. Processing the CDR file will be performed. To the result, click on the **show** link. The results are displayed in the table at the bottom. If some data was not processed or processed incorrectly, repeat the field configurations. To update the table with processing result, click on the **refresh** link.

4.11.5. CDR format for Asterisk

If you have selected the **Asterisk** item in the **Equipment** list (Figure 4.11.1), click on the **Advanced settings** button located to the right of the **Equipment** list. The **Advanced settings** window appears as shown in Figure 4.11.5.1.

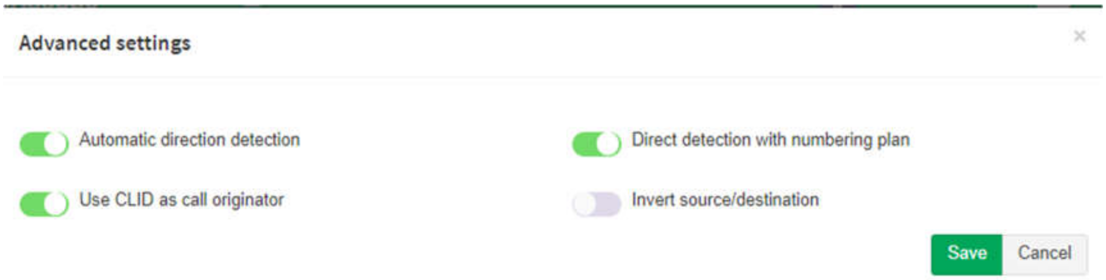


Figure 4.11.5.1

These settings are applied to Asterisk with CDR that is contained in MySQL database.

CDR format of Asterisk does not contain information about call direction; therefore, a call direction can be automatically defined by Tariscope or based on the numbering plan.

When the CDR is processed, the telephone numbers with number of digits is equal to or less than 4 is considered as internal ones (extensions). To use this method of definition, turn on the **Automatic direction detection** switch.

For using numbering plan to define extensions and external phone numbers, turn on the **Detect direction with numbering plan** switch.

If you have problem with detection of a call originator, turn the **Use CLID as call originator** switch.

If after processing CDR, you find that a call source and call destination should be inverted, turn on the **Invert source/destination** switch.

To keep settings, click **Save**.

4.11.6. Automatic CDR format detection

Tariscope provides an automatic CDR format detection for most of telephone systems during CDR processing. If you do not know a type of your telephone system, you can try to process CDR files using the automatic detection. To do this, select the **Auto** item in the **Equipment** list (Figure 4.11.1).

But if you know your telephone system type, we recommend to choose this type in the **Equipment** list.

4.11.7. Settings for Avaya Aura, S8800, S87xx, S8600, S8400, S8300, and Definity

If you have selected the **Avaya Definity** item in the **Equipment** list (Figure 4.11.1), click on the **Advanced settings** button located to the right of the **Equipment** list. The **Advanced settings** window appears as shown in Figure 4.11.7.1.

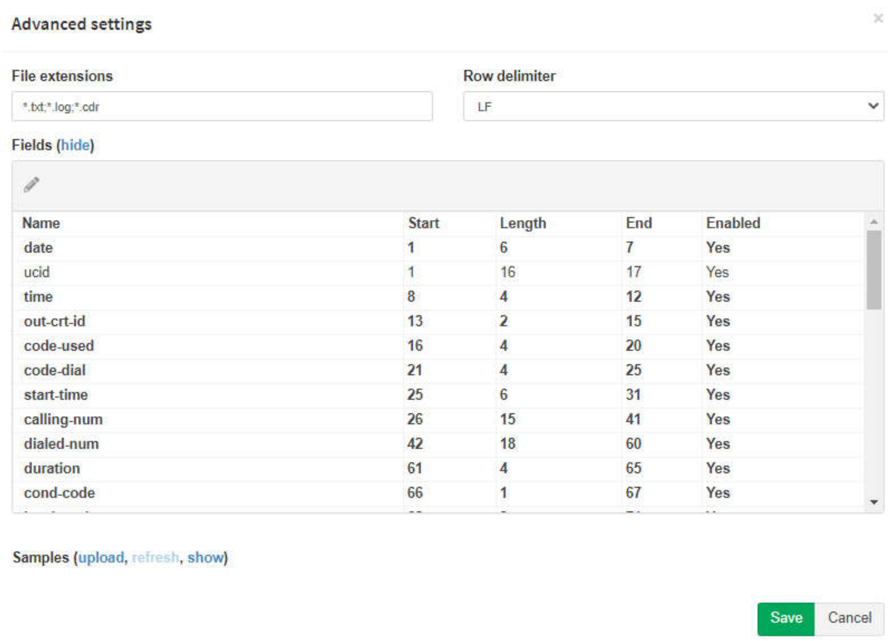


Figure 4.11.7.1

The window allows you to select fields and their order in which they were specified in PBX.

The window contains:

- The **File extensions** box. It contains a list of CDR files extensions. By default, the TXT, LOG and CDR extensions are offered.
- The **Row Delimiter** list are not used now.

There is a table with columns:

- **Name**. Displays field names that are used for configuration.
- **Start**. Displays a start position of fields.
- **Length**. Displays a field length in characters.
- **End**. Displays an end position of the field.
- **Enabled**. A sign of use this field in CDR format.

To change field settings, select the desired row and click on the **Edit** icon on the toolbar. The **Advanced settings** window changes its contents. An example of the window is shown in Figure 4.11.7.2.

In the **Name** box the field name is displayed that is used in Alcatel documentation. If you wish, you can change it.

If Tariscope must process this field, turn on the **Enabled** switch.

If the original string of CDR data needs to be processed only if it contains this field, turn on the **Optional** switch. If this switch is on, but the field is absent, the CDR string will be processed, but this field will be blank. The required fields for processing are shown in bold in the table.

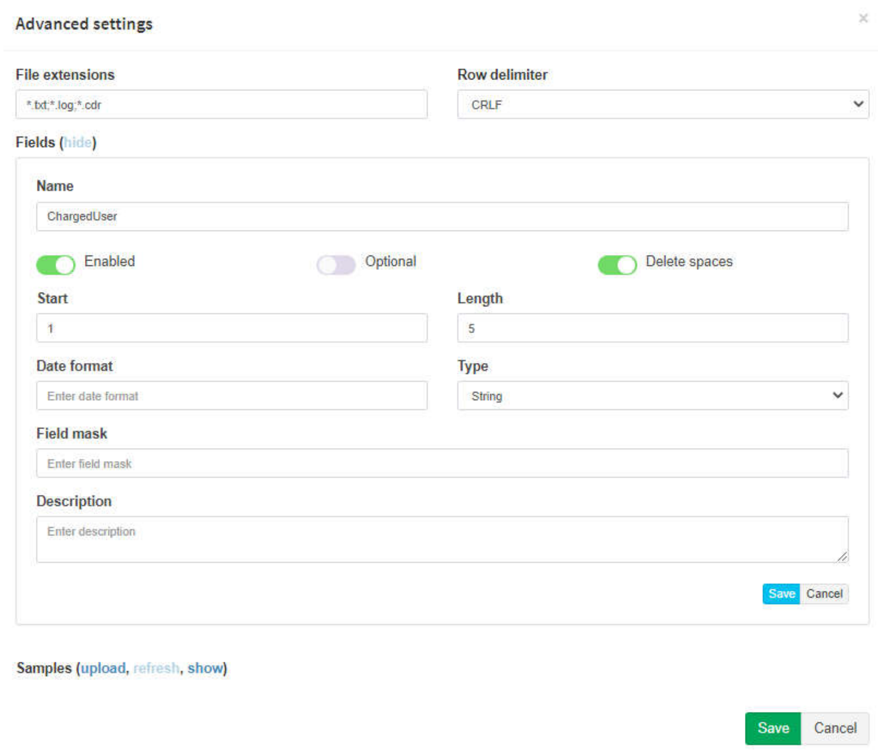


Figure 4.11.7.2

To correct process CDR, Tariscope must delete spaces in CDR. By default, the **Delete spaces** switch is on. Do not turn off the switch.

The **Start** box displays a start position of the field. You can change the value.

The **Length** box displays the field length. You can change the value.

The **Date format** box allows to specify format for the field. It can apply, for example, for the **Date** field, where you should specify a date format that is used in CDR.

The **Type** list allows you to choose the required data type.

The **Filed mask** box is used to verify the correctness of the field settings. You can type a regular expression in the box.

The **Description** box allows you to enter the field description.

To save parameters of the field, click **Save**.

Check on the settings for all fields. If you have an example of CDR file, to verify the configuration parameters of CDR format, click on the **upload** link (Figure 4.11.4.1), and select the CDR file. Processing the CDR file will be performed. To the result, click on the **show** link. The results are displayed in the table at the bottom. If some data was not processed or processed incorrectly, repeat the field configurations. To update the table with processing result, click on the **refresh** link.

4.11.8. Settings for Avaya IP Office

If you have selected the **Avaya IP Office** item in the **Equipment** list (Figure 4.11.1), you do not need to perform any settings for CDR format of this telephone system.

4.11.9. Settings for Avaya Session Manager

If you have selected the **Avaya Session Manager** item in the **Equipment** list (Figure 4.11.1), you do not need to perform any settings for CDR format of this telephone system.

4.11.10. Settings for Cisco Unified Communications Manager

If you have selected the **Cisco CallManager** item in the **Equipment** list (Figure 4.11.1), click on the **Advanced settings** button (Figure 4.11.1). The **Advanced settings** window appears as shown in Figure 4.11.10.1.

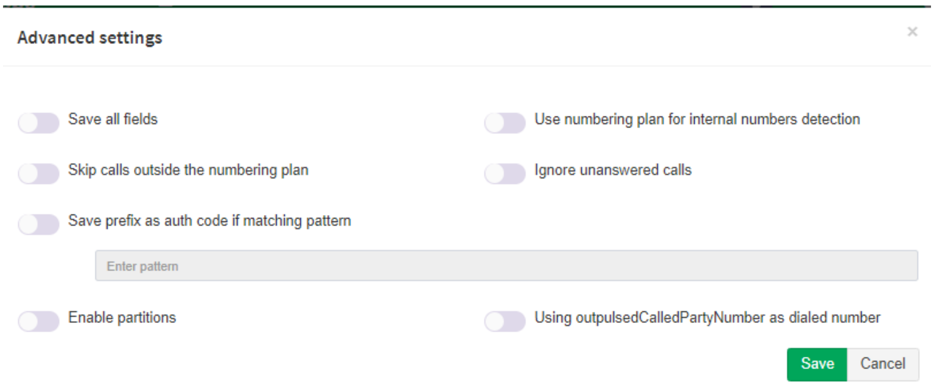


Figure 4.11.10.1

CDR format of CUCM contains hundreds of different fields. Some of the fields are not used to call rating. They are complementary. Therefore, by default, only those fields, which are used for call rating, are processed, and saved in the Tariscope database. In order to all fields of CDR file are processed and saved in the Tariscope database, turn on the **Save all fields** switch. It should be borne in mind that the storage of all fields requires more disk space.

To correctly detect the internal and external telephone numbers, you should use a numbering plan. To do this, turn on the **Use numbering plan for internal numbers detection** switch.

If you use a numbering plan, but you do not want to handle calls that do not belong to the numbering plan, turn on the **Skip calls outside the numbering plan** switch. This saves the disk space and increases the productivity.

If you do not want to process information about unanswered calls, turn on the **Ignore unanswered calls** switch.

To account the authorization codes, turn on the **Save prefix as auth code if matching pattern** switch, and enter a pattern, which will be used to define the authorization codes.

If you have more than one partition in CUCM, turn on the **Enable partitions** switch. This allows to correctly define a subscriber who made the call.

If you need to use the **outpuledCalledPartyNumber** field from CDR as the dialed number, turn on the **Using outpuledCalledPartyNumber as dialed number** switch.

Click **Save** to keep settings.

4.11.11. Settings for CUBE (Cisco CallManager Express)

These settings can be applied to Cisco Unified Border Element (CUCM) or Cisco routers with CallManager Express.

If you have selected the **Cisco IOS VoIP** item in the **Equipment** list (Figure 4.11.1), click on the **Advanced settings** button (Figure 4.11.1). The **Advanced settings** window appears as shown in Figure 4.11.11.1.

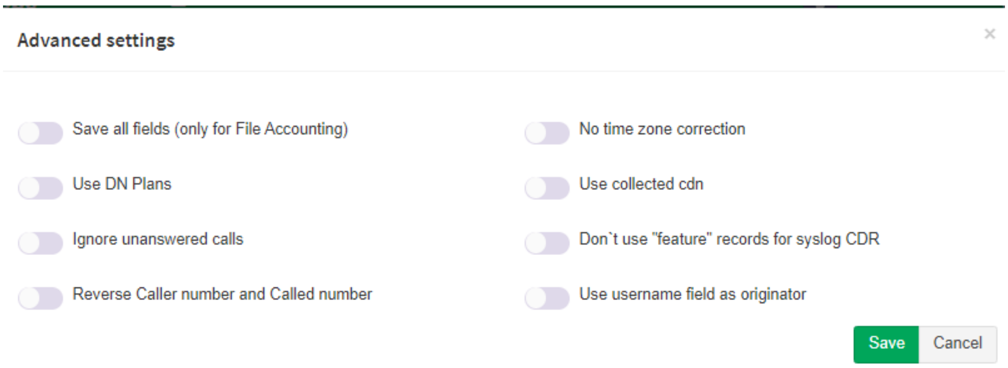


Figure 4.11.11.1

If you wish to analyze all CDR fields and you use the File Accounting method to collect CDR, turn on the **Save all fields** switch. It should note that this will require additional memory on the hard disk and the productivity of the server will be lower. If you do not turn on this switch, Tariscope will process only fields that are used for calls rating.

If you do not turn on the **No time zone correction** switch, Tariscope will adjust a time from CDR to a time zone that was set on your computer.

To correctly determine the internal and external telephone numbers we recommend using a numbering plan, turn on the **Use DN plans** switch.

If CDR file contains information about a dialed number in the "gw_collected_cdn (103)" field, turn on the **Use collected cdn** switch. If you do not know this information, do not turn on the switch. Process the CDR data and check whether there is the dialed number for outgoing calls. If it is absence, turn on the switch.

If you do not wish to process unanswered calls, turn on the **Ignore unanswered calls** switch.

If your telephone system uses the old syslog format that does not contain the feature records, select the **Don't use "feature" records for syslog CDR** switch.

The **Reverse Caller number and Called number** switch allows you to change places the following CDR fields: **Caller number** and **Called number**.

If you want to use the username field from CDR data as the call originator, turn on the corresponding switch.

4.11.12. Settings for Cisco PGW 2200

If you have selected the Cisco PGW 2200 item in the **Equipment** list (Figure 4.11.1), you do not need to perform any settings for CDR format of this telephone system.

4.11.13. Settings for Coral FlexiCom

If you have selected the **Coral FlexiCom** item in the **Equipment** list (Figure 4.11.1), you do not need to perform any settings for CDR format of this telephone system.

4.11.14. Settings for Epygi QX1000

If you have selected the **Epygi QX1000** item in the **Equipment** list (Figure 4.11.1), you do not need to perform any settings for CDR format of this telephone system.

4.11.15. Settings for Ericsson Business Phone 250

If you have selected the **Ericsson Business Phone 250** item in the **Equipment** list (Figure 4.11.1), you do not need to perform any settings for CDR format of this telephone system.

4.11.16. Settings for Aastra (Ericsson) MD110

If you have selected the **Ericsson MD110** item in the **Equipment** list (Figure 4.11.1), you do not need to perform any settings for CDR format of this telephone system.

4.11.17. Settings for Farlep F-1500

If you have selected the **Farlep F-1500** item in the **Equipment** list (Figure 4.11.1), click on the **Advanced settings** button (Figure 4.11.1). The **Advanced settings** window appears as shown in Figure 4.11.17.1.

Figure 4.11.17.1

The window allows you to select the CDR format that is used in the telephone system. There are the following options:

- Auto.
- Record296.
- Record306.
- Record476.

Select the required format and click **Save**.

4.11.18. Settings for Informtekhnika Minicom DX-500

If you have selected the **Informtekhnika Minicom DX-500** item in the **Equipment** list (Figure 4.11.1), you do not need to perform any settings for CDR format of this telephone system.

4.11.19. Settings for Iskratel SI3000 / SI2000

If you selected the **Iskratel SI-2000** item, which is applicable to SI3000 and SI2000, in the **Equipment** list (Figure 4.11.1), click the **Advanced settings** button. The **Advanced settings** window appears, as shown in Figure 4.11.19.1.

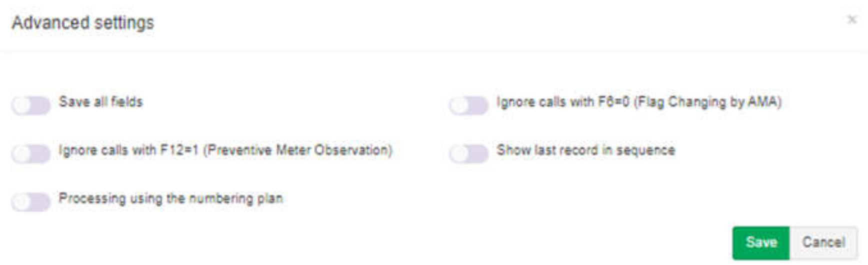


Figure 4.11.19.1

If you want to store in the Tariscope database all fields of the AMA file, but not only those that are required for call rating, turn on the **Save all fields** switch.

In SI3000 (SI2000) the intermediate AMA records are formed every 30 minutes for calls with duration more than 30 minutes. This can lead to double rating such calls. To avoid this, turn on the **Ignore calls with F6=0 (Flag Charging by AMA)** and **Ignore calls with F12=1 (Preventive Meter Observation)** switches.

If the SI3000 settings provide a receiving of the last record for calls with duration more than 30 minutes that contains a result information about these calls, turn on the **Show only last record in sequence** switch, and don't turn on the **Ignore calls with F6=0 (Flag Charging by AMA)** and **Ignore calls with F12=1 (Preventive Meter Observation)** switches.

If your subscribers are connected to another telephone system and SI3000 is used as a transit telephone system, to charge the calls cost to subscribers, turn on the **Processing using the numbering plan** switch. Otherwise, the transit calls will not be rated.

4.11.20. Settings for Karel DS200

If you have selected the **Karel DS200** item in the **Equipment** list (Figure 4.11.1), you do not need to perform any settings to process calls data from this telephone system.

4.11.21. Settings for Kvant

If you have selected the **Kvant** item in the **Equipment** list (Figure 4.11.1), click on the **Advanced settings** button. The **Advanced settings** window appears as shown in Figure 4.11.21.1.

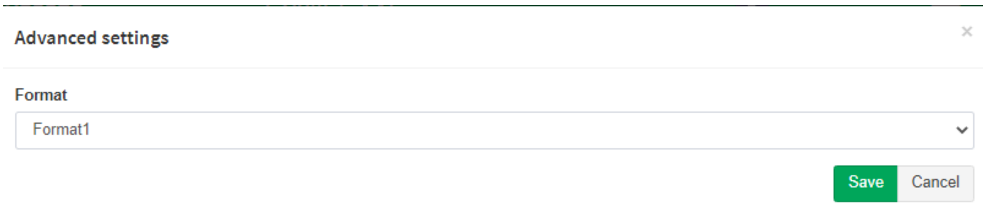


Figure 4.11.21.1

The window allows to select a CDR format that is used in the telephone system. There are the following options:

- Format1.
- Format2.
- Format3.

Select the required format and click **Save**.

4.11.22. Settings for LG GHX-46

If you have selected the **LG GHX-46** item in the **Equipment** list (Figure 4.11.1), you do not need to perform any settings for CDR format of this telephone system.

4.11.23. Settings for LG LDK 100/300/600 and LG iPECS-MG

If you have selected the **LG LDK 100/300** item in the **Equipment** list (Figure 4.11.1), click on the **Advanced settings** button (Figure 4.11.1). The **Advanced settings** window appears as shown in Figure 4.11.23.1.

The window allows you to select the required date format. Select it from the **Data format** list.

When processing a transfer call, by default, Tariscope charges a total call cost to a subscriber who made the call transfer. If you wish to split the call cost between subscribers who took part in the call, turn on the **Split the cost of the call between transfer members** switch.

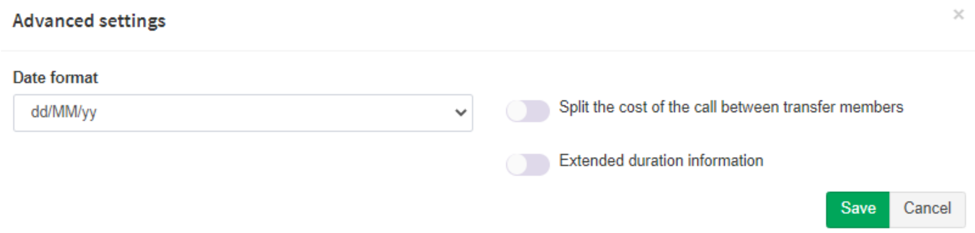


Figure 4.11.23.1

The **Enabled duration information** switch is not used in this configuration.

Click **Save**.

4.11.24. Settings for LG-Ericsson iPECS-LIK 100/300/600/1200

If you have selected the **LG-Ericsson iPECS-LIK** item in the **Equipment** list (Figure 4.11.1), click on the **Advanced settings** button (Figure 4.11.1). The **Advanced settings** window appears as shown in Figure 4.11.24.1.

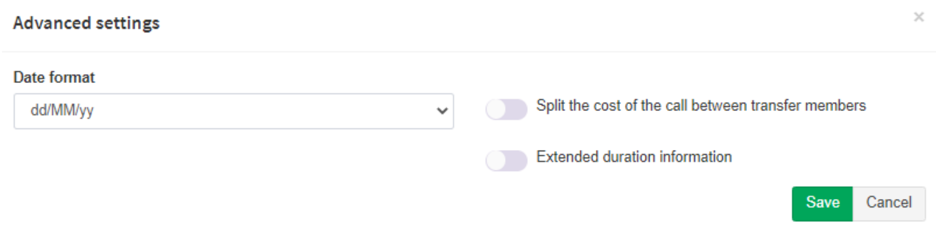


Figure 4.11.24.1

The window allows you to select the required date format. Select it from the **Data format** list.

When processing a transfer call, by default, Tariscope charges a total call cost to a subscriber who made the call transfer. If you wish to split the call cost between subscribers who took part in the call, turn on the **Split the cost of the call between transfer members** switch.

The **Enabled duration information** switch is not used in this configuration.

Click **Save**.

4.11.25. Settings for MfiSoft RTU

If you have selected the **MfiSoft RTU** item in the **Equipment** list (Figure 4.11.1), you do not need to perform any settings for CDR format of this telephone system.

4.11.26. Settings for Microsoft Lync 2013

If you have selected the **Microsoft Lync 2013** item in the **Equipment** list (Figure 4.11.1), click on the **Advanced settings** button (Figure 4.11.1). The **Advanced settings** window appears as shown in Figure 4.11.26.1.

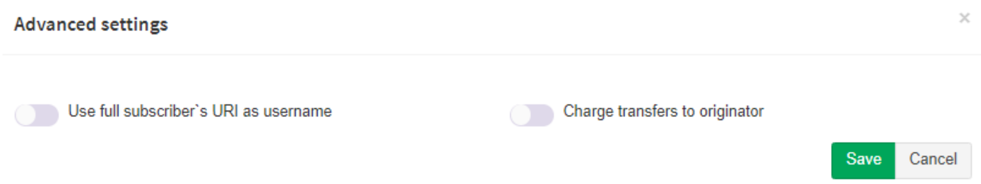


Figure 4.12.26.1

By default, Tariscope saves a subscriber's URI without a domain name. For example, manager@softpiua.com will be saves as 'manager'. If you desire to save a full URI, turn on the **Use full subscriber's URI as username** switch.

The **Charge transfers to originator** switch is used to specify how the call transfer cost will be charged. If the switch is not on, the call transfer cost are charged to all subscribers who took part in such a call. If the switch is on, the call transfer cost is charged to the originator of the call transfer.

Click **Save**.

4.11.27. Settings for Mitel SX-2000 and 3300 ICP

If you have selected the **Mitel 3300** item in the **Equipment** list (Figure 4.11.1), click on the **Advanced settings** button (Figure 4.11.1). The **Advanced settings** window appears as shown in Figure 4.11.27.1.

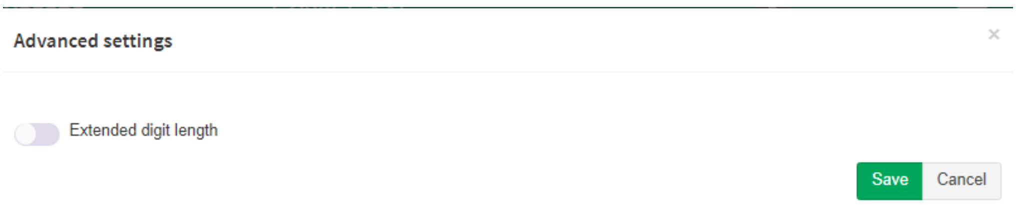


Figure 4.11.27.1

If your PBX has an extended telephone numbers for extensions, turn on the **Extended digit length** switch. Click **Save**.

4.11.28. Settings for NEC NEAX 2000, NEAX 2400 IMS, Univerge SV8100/SV8300

If you have selected the **NEC NEAX / UNIVERGE** item in the **Equipment** list (Figure 4.11.1), click on the **Advanced settings** button (Figure 4.11.1). The **Advanced settings** window appears as shown in Figure 4.11.28.1.

Figure 4.11.28.1

In the **Data format** list, select the format that is used in PBX. Click **Save**.

4.11.29. NetFlow collector settings

If you have selected the **NetFlow sensor** item in the **Equipment** list (Figure 4.11.1) that is used to collect information about IP traffic using NetFlow v.5 or 9, IPFIX, or rFlow, click on the **Advanced settings** button (Figure 4.11.1). The **Advanced settings** window appears as shown in Figure 4.11.29.1.

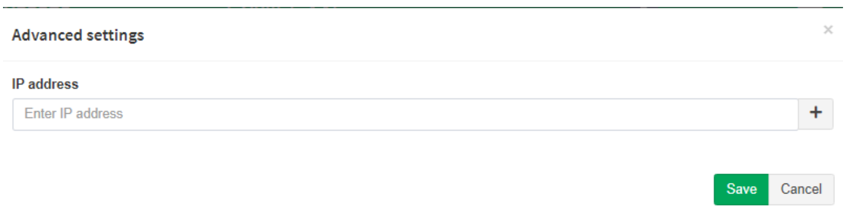


Figure 4.11.29.1

The window allows to specify IP addresses of network devices from which NetFlow information will be collected.

Enter an IP address and click '+'. Repeat the input to add all IP addresses. Click **Save**.

4.11.30. Settings for Avaya (Nortel) CS1000, Meridian 1, BCM 50, 200, 400 and 450 (SL1)

This option is applied to Avaya (earlier Nortel, Kapsch) Communications Server 1000 (CS1000), Meridian 1, and Business Communications Manager 50/200/400/450 (BCM 50/200/400/450). For BCM 50/200/400/450 this setting is applied only in case when SL 1 format is used.

If you have selected the **Nortel Meridian 1/CS 1000** item in the **Equipment** list (Figure 4.11.1), click on the **Advanced settings** button (Figure 4.11.1). The **Advanced settings** window appears as shown in Figure 4.11.30.1.

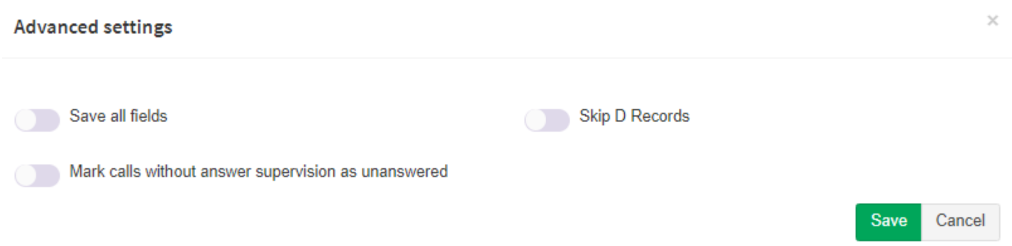


Figure 4.11.30.1

To save all fields, which CDR contains, turn on the **Save all fields** switch.

If CDR data contains D records and you do not want to process these records, turn on the **Skip D records** switch. If the D records will be processed, the call cost will be double, since the N records also contain the same CDR information.

If you handle incoming calls and want to consider the calls without answer of supervisor as unanswered calls, turn on the **Mark calls without answer supervision as unanswered** switch.

Click **Save**.

4.11.31. Settings for Avaya (Nortel) BCM (Norstar format)

This choice is applied for Business Communications Manager (BCM) 50, 200, 400 and 450, when Norstar format of CDR was set in PBX.

If you have selected the **Nortel Norstar/BCM** item in the **Equipment** list (Figure 4.11.1), you do not need to perform any settings for CDR format of this telephone system.

4.11.32. Settings for Panasonic KX-TD and KX-TDA

If you have selected the **Panasonic KX-xxx** item in the **Equipment type** list (Figure 3.12.1), click on the **Advanced settings** button (Figure 4.11.1). The **Advanced settings** window appears as shown in Figure 4.11.32.1.

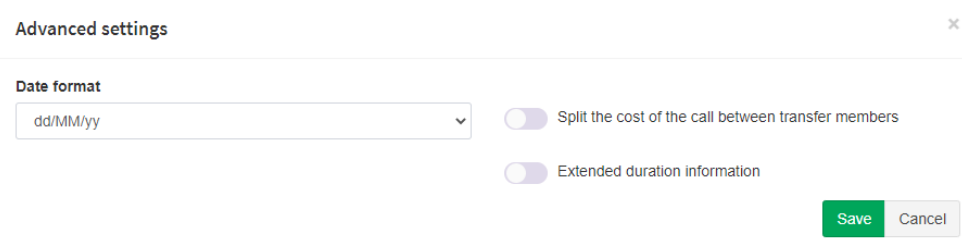


Figure 4.11.32.1

The window allows you to select the required date format. Select it from the **Data format** list.

When processing a transfer call, by default, Tariscope charges a total call cost to a subscriber who made the call transfer. If you wish to split the call cost between subscribers who took part in the call, turn on the **Split the cost of the call between transfer members** switch.

The **Enabled duration information** switch is not used in this configuration.

Click **Save**.

4.11.33. Settings for Platan PBX Server Libra

If you have selected the **Platan PBX Server Libra** item in the **Equipment** list (Figure 4.11.1), you do not need to perform any settings for CDR format of this telephone system.

4.11.34. Settings for Profinfotech Billion Softswitch

If you have selected the **Profinfotech Billion Softswitch** item in the **Equipment** list (Figure 4.11.1), you do not need to perform any settings for CDR format of this telephone system.

4.11.35. Settings for Rustelecom Elcom

If you have selected the **Rustelecom Elcom** item in the **Equipment** list (Figure 4.11.1), you do not need to perform any settings for CDR format of this telephone system.

4.11.36. Settings for Rus Tex Agat UX

If you have selected the **Rus Tex Agat UX** item in the **Equipment** list (Figure 4.11.1), you do not need to perform any settings for CDR format of this telephone system.

4.11.37. Settings for Samsung iDSC-500 and OfficeServ

If you have selected the **Samsung iDSC500/OfficeServ** item in the **Equipment** list (Figure 4.11.1), click on the **Advanced settings** button (Figure 4.11.1). The **Advanced settings** window appears as shown in Figure 4.11.37.1.

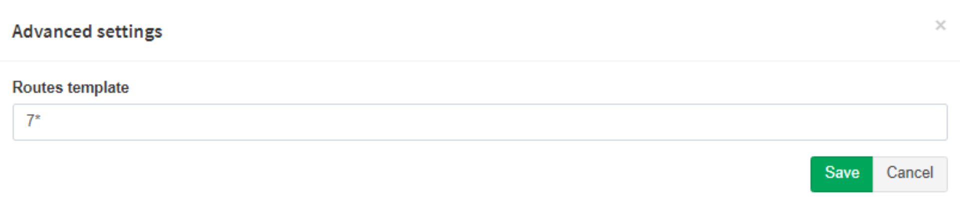


Figure 4.11.37.1

You can set the pattern to differ telephone numbers of subscribers and trunks. By default, the pattern of 7* is used for trunks.

If you use another digit for trunks, type it in the **Route template** box and click **Save**.

4.11.38. Settings for Siemens HiPath 4000

If you have selected the **Siemens HiPath 4000** item in the **Equipment type** list (Figure 4.11.1), click on the **Advanced settings** button (Figure 4.11.1). The **Advanced settings** window appears as shown in Figure 4.11.38.1.

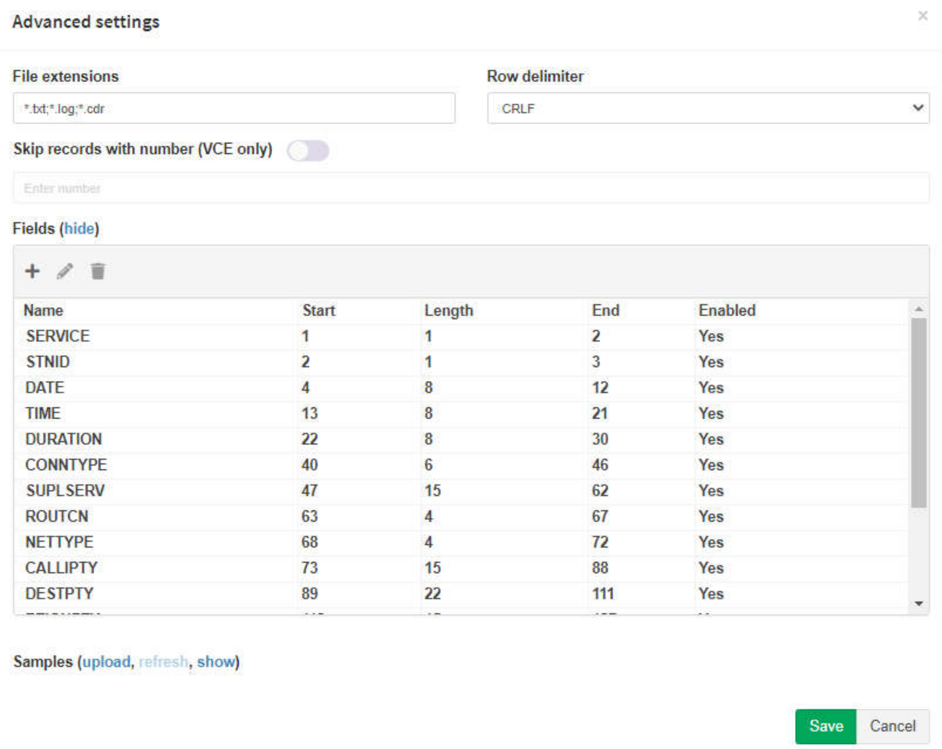


Figure 4.11.38.1

The window allows you to select fields and their order in which they were specified in PBX.

The window contains:

- The **File extensions** box. It contains a list of CDR files extensions. By default, the TXT, LOG and CDR extensions are offered.
- The **Row Delimiter** lists are not used.

If you do not want to process CDRs where calls make from the specific extensions, turn on the **Skip records with number (VCE only)** switch, end enter the extension number in the text box.

The **Advance settings** window contains a table with columns:

- **Name**. Displays field names that are used for configuration.
- **Start**. Displays a start position of fields.
- **Length**. Displays a field length in characters.
- **End**. Displays an end position of the field.
- **Enabled**. A sign using the field in CDR format.

To change field settings, select the desired row and click on the **Edit** icon on the toolbar. The **Advanced settings** window changes its contents. An example of the window is shown in Figure 4.11.38.2.

In the **Name** box the field name is displayed that is used in Alcatel documentation. If you wish, you can change it.

If Tariscope must process this field, turn on the **Enabled** switch.

If the original string of CDR data needs to be processed only if it contains this field, turn on the **Optional** switch. If this switch is on, but the field is absent, the CDR string will be processed, but this field will be blank. The required fields for processing are shown in bold in the table.

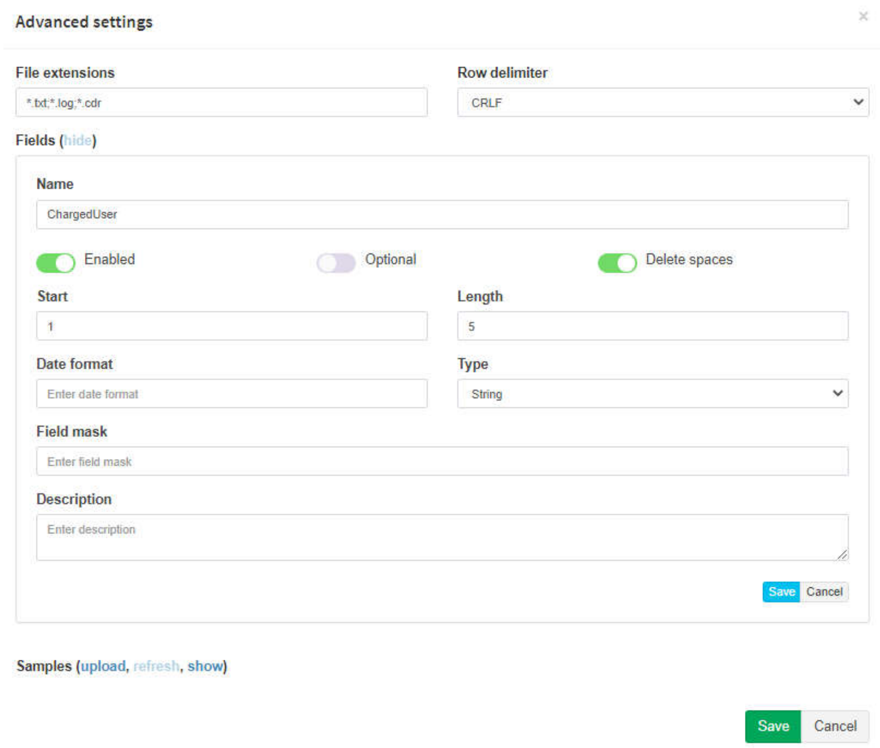


Figure 4.11.38.2

To correct process CDR, Tariscope must delete spaces in CDR. By default, the **Delete spaces** switch is on. Do not turn off the switch.

The **Start** box displays a start position of the field. You can change the value.

The **Length** box displays the field length. You can change the value.

The **Date format** box allows to specify format for the field. It can apply, for example, for the **Date** field, where you should specify a date format that is used in CDR.

The **Type** list allows you to choose the required data type.

The **Filed mask** box is used to verify the correctness of the field settings. You can type a regular expression in the box.

The **Description** box allows you to enter the field description.

To save parameters of the field, click **Save**.

Check on the settings for all fields. If you have an example of CDR file, to verify the configuration parameters of CDR format, click on the **upload** link (Figure

4.11.38.1), and select the CDR file. Processing the CDR file will be performed. To the result, click on the **show** link. The results are displayed in the table at the bottom. If some data was not processed or processed incorrectly, repeat the field configurations. To update the table with processing result, click on the **refresh** link.

4.11.39. Settings for Siemens HiPath 3000 and Hicom

If you have selected the **Siemens HiPath/Hicom** item in the **Equipment** list (Figure 4.11.1), you do not need to perform any settings for CDR format of this telephone system.

4.11.40. Settings for Unify OpenScape Office and OpenScape Voice

These settings are applied to Unify OpenScape Office V3 MX/LX and OpenScape Voice v.5 – v.9.

If you have selected the **Unify OpenScape Office** item in the **Equipment** list (Figure 4.11.1), you do not need to perform any settings for CDR format of this telephone system.

4.11.41. Settings for Telsystems Oktell

If you have selected the **Telsystems Oktell** item in the **Equipment** list (Figure 4.12.1), you do not need to perform any settings for CDR format of this telephone system.

4.11.42. Settings for Wyatts DK2000, Reuters Voice System DK2000/SNX/MRX

If you have selected the **Wyatts DK2000** item in the **Equipment** list (Figure 4.12.1), you do not need to perform any settings for CDR format of this telephone system.

4.11.43. Settings for Grandstream UCM6100 / UCM6510

If you have selected the **Grandstream** item in the **Equipment** list (Figure 4.11.1) that is applied for Grandstream UCM6100 and UCM6510, you do not need to perform any settings for CDR format of this telephone system.

4.11.44. Settings for Audio Codes Mediant Gateways

If you have selected the **Audio Codes Mediant** item in the **Equipment** list (Figure 4.11.1), that is applied for Audio Codes Mediant 800B and 1000B Gateway & E-SBC, you do not need to perform any settings for CDR format of this telephone system.

4.11.45. Settings for SAP BCM

If you have selected the **SAP BCM** item in the **Equipment** list (Figure 4.11.1), that is applied for SAP Business Communication Management, you do not need to perform any settings for CDR format of this telephone system.

4.11.46. Settings for M-200 (MTA)

If you have selected the **M-200** item in the **Equipment** list (Figure 4.12.1), you do not need to perform any settings for CDR format of this telephone system.

4.11.47. Settings for Avaya Session Border Controller for Enterprise (ASBCE)

If you have selected the **ASBCE** item in the **Equipment** list (Figure 4.11.1), click on the **Advanced settings** button (Figure 4.11.1). The **Advanced settings** window appears as shown in Figure 4.11.47.1.

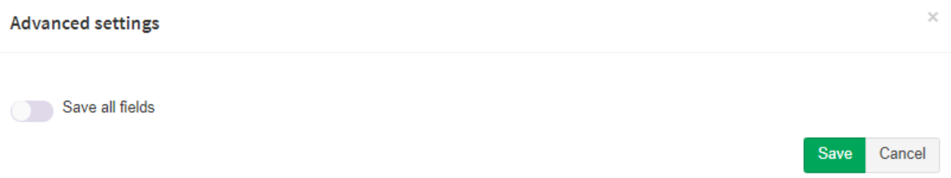


Figure 4.11.47.1

If you wish to keep all CDR fields that the CDR data contain, turn on the **Save all fields** switch, and click **Save**.

4.11.48. Numbering plan

A numbering plan is a type of numbering scheme used in telecommunications to assign telephone numbers or IP addresses to a subscriber. The numbering plan is required to detect a subscriber who made the call and to rate the call.

A numbering plan is entered individually for each telephone system. To create the numbering plan, select the **Numbering plan** subbranch of the desired telephone system. The **Numbering plan** page is opened. An example of the page is shown in Figure 4.11.48.1.

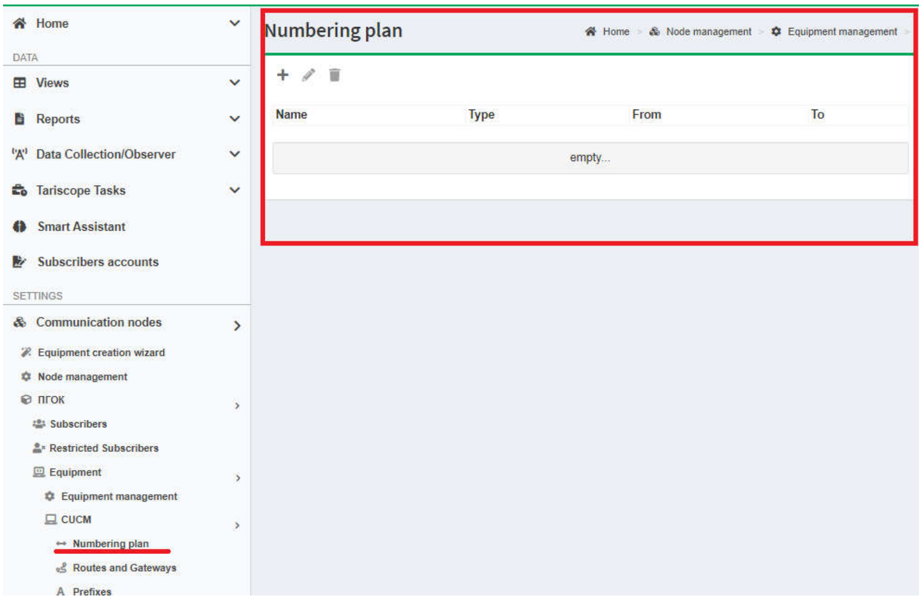


Figure 4.11.48.1

On the toolbar, click on the **Add** icon. The **New numbering plan** window appears as shown in Figure 4.11.48.2.

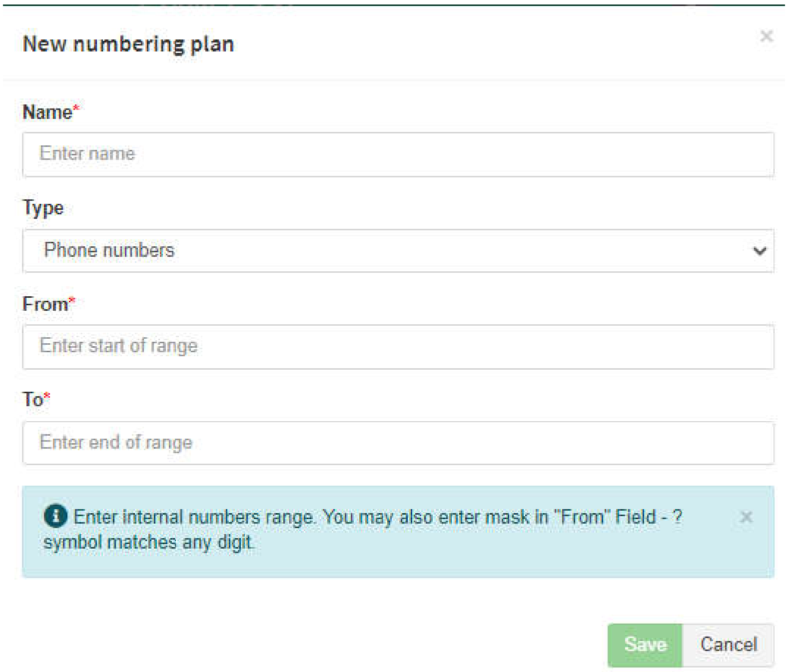


Figure 4.11.48.2

In the **Name** box, type a range name of telephone numbers or IP addresses. For example, if you want to enter the range from 4900 to 4999, you can assign the name: 49xx.

If you enter a numbering plan for telephone system, in the **Type** list, select **Phone Numbers**.

If you enter a numbering plan for IP addresses, in the **Type** list, select **IPv4 Addresses** or **IPv6 Addresses**.

In the **From** box, type a telephone number (IP address) that is the first one in the range.

In the **To** box, type a telephone number (IP address) that is the last one in the range.

Click **Save**.

Repeat these actions for other ranges.

4.11.49. Routes and Gateways

A route is a group of trunks which connects your telephone system with a telephone exchange of telecommunications service provider. The notion of gateway is used in Voice over IP networks (VoIP). A gateway provides connectivity between IP networks and traditional telecommunications channels.

To correctly rate calls, Tariscope must know what rate should be applied to a call made through a specific route or gateway. Therefore, you should specify this information in Tariscope.

To enter the route or gateway parameters, select the **Routes and Gateways** subbranch of the desired telephone system. The **Routes and Gateways** page appears. An example of the page is shown in Figure 4.11.49.1.

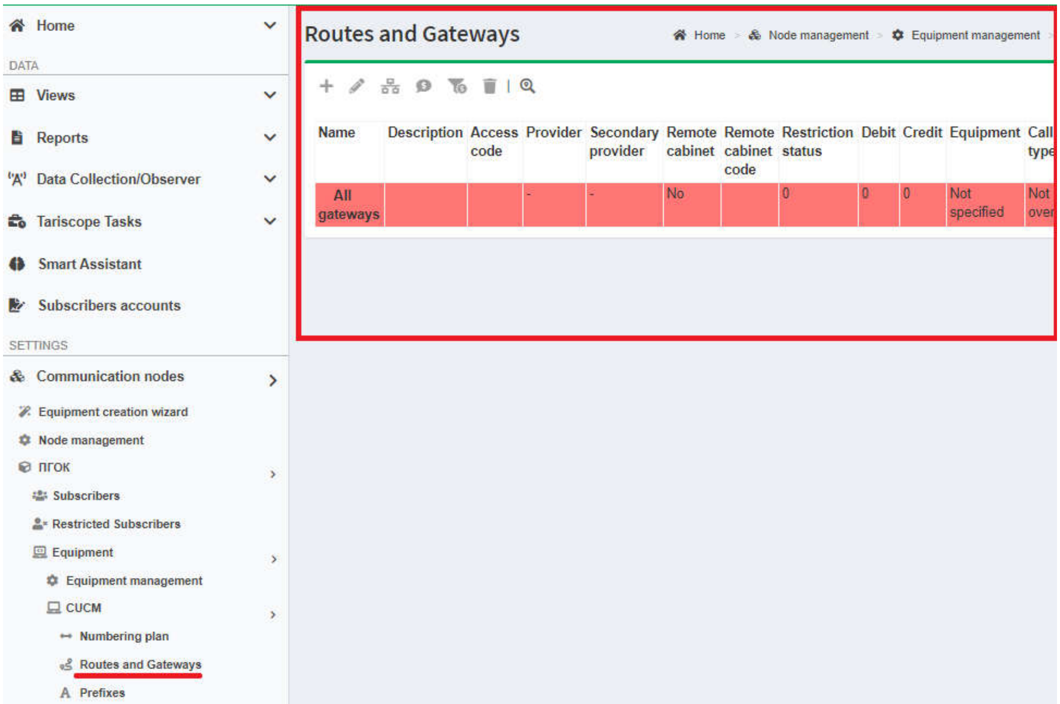


Figure 4.11.49.1

This page allows to specify:

- an access code to a specific route that ensures the correct definition of the dialed number,
- a main telecommunications service provider, whose rates are used for calls through the route or gateway,
- an additional telecommunications service provider, whose rates are used for alternative rating,
- a virtual subscriber that is used for charging all calls of the route,

- an access code to properly recognize calls made from the PBX, that is a remote PBX,
- a configuration of limits on the route or gateway,
- a communication with other telephone systems of the private telephone network.

If you want to specify general information for all routes, double-click on the **All routes** line.

If you want to specify general information for all gateways, double-click on the **All gateways** line.

To specify data for a specific route, select the **All routes** line, and click on the **Add** icon on the toolbar.

To specify data for a specific gateway, select the **All gateways** line, and click on the **Add** icon on the toolbar.

In all cases the **Creating** windows appears as shown in Figure 4.11.49.2.

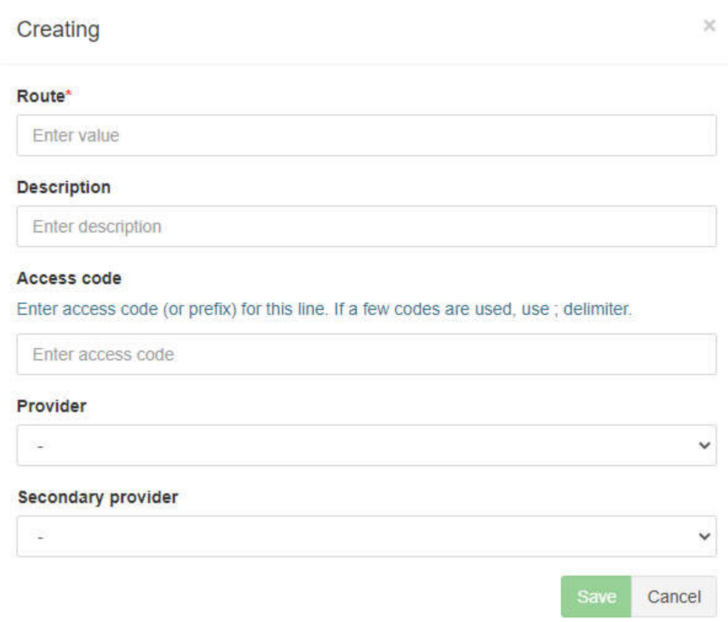


Figure 4.11.49.2

When you create a new route, in the **Route** box, type a route number. This number must match the number of the route (trunks group), which is present in CDRs received from the PBX.

The **Description** box is auxiliary. In the box you can specify, for example, the provider name to which the route is connected. This information can be used, for example, in the Tariscope reports.

If in the CDR data, an access code is present in the dialed number, enter the code in the **Access code** box. This information is necessary for the proper determination of the type of call and, accordingly, to rate the call.

Some PBXs, for example, Communications Server 1000 or Meridian 1 (Avaya or Nortel), can have a few different access codes to single route. In this case you must enter all access codes in the **Access code** box separating them via semicolons. For example, the following codes are used: 9, 7001 and 7002. In the **Access code** box, you must enter: 9;7001;7002

In the **Provider** list, select a telecommunications service provider the rates of which will be used to rating. Tariscope contains parameters of a few telecommunications service providers from different countries. If the required provider is absent in this list, you can try to import the desired provider from the SoftPI Web-site or enter its parameter in the **Providers and rates** configuration page.

If you need also to rate calls using an alternative rating, in the **Secondary provider** list, select the desired provider.

Click **Save**.

A new record appears in the Routes and Gateways table.

If you wish to edit settings of a route, select it in the table and click on the **Edit** icon on the toolbar. In case when you edit parameters of all routes, the **Route** box is not accessible.

The **Routes and Gateways** page contains the toolbar (Figure 4.11.49.1), which besides the creation and editing allows you to make other settings related to routes or gateways.

Settings for private telephone networks

Tariscope call processing works so that calls within one PBX, i.e. without using routes (gateways), are considered internal. Calls received or made using routes (gateways) are considered as an external call (local, long distance, international or mobile operators). Therefore, if a user has several PBXs that are interconnected, then the call of a subscriber of one PBX to the subscriber of another PBX is considered as an external call by default. If you have a private telephone network and you want the calls inside this network are recognized, for example, as corporate calls, select the route connected your two PBXs and click on the **Equipment network** icon on the toolbar. The **Equipment network** window appears as shown in Figure 4.11.49.3.

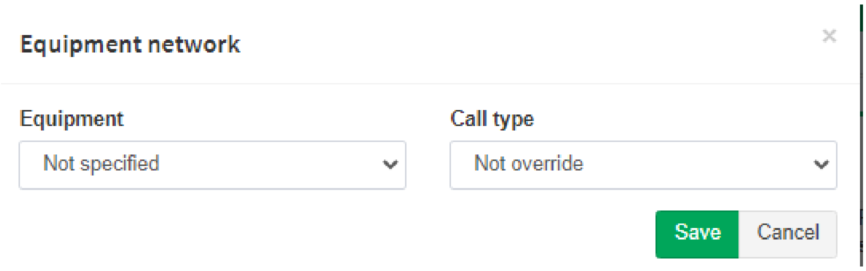


Figure 4.11.49.3

In the **Equipment** list, select the PBX name to which the route connects the current PBX.

In the **Call type** list select the desired call type for calls to subscribers of PBX that you have selected on the previous step.

Rating transit calls

By default, Tariscope does not rate transit calls. If you want to rate such calls, you can do this using a virtual subscriber. To create a virtual subscriber, you should create the subscriber, click on the **Details** button on the toolbar and turn on the **Virtual subscriber** switch (Figure 4.11.49.4), then save the setting.

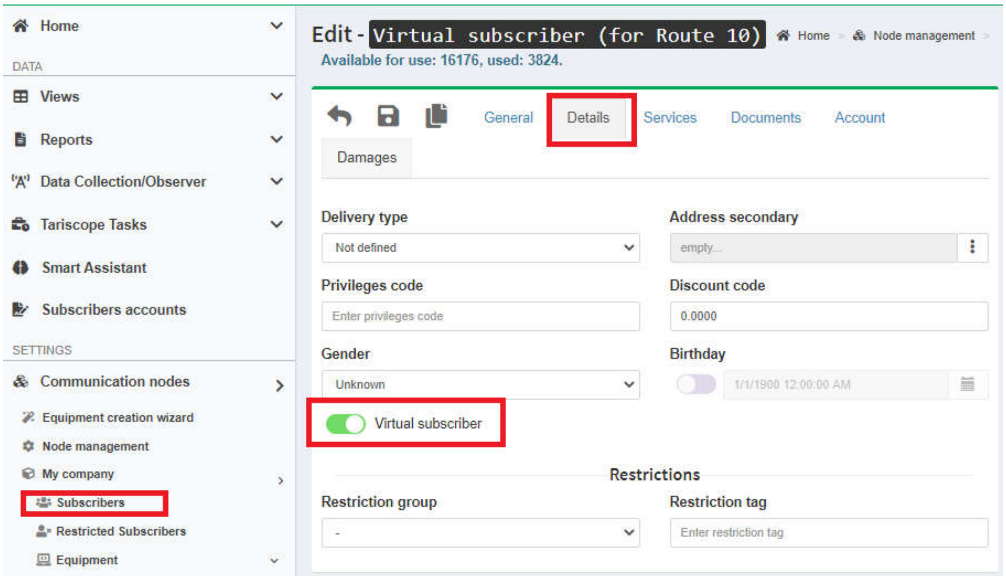


Figure 4.11.49.4

In the **Route and Gateways** table (Figure 4.11.49.1), select the route and click on the **Transit call tariffication** icon. The Transit call tariffication window appears as shown in Figure 4.11.49.5.

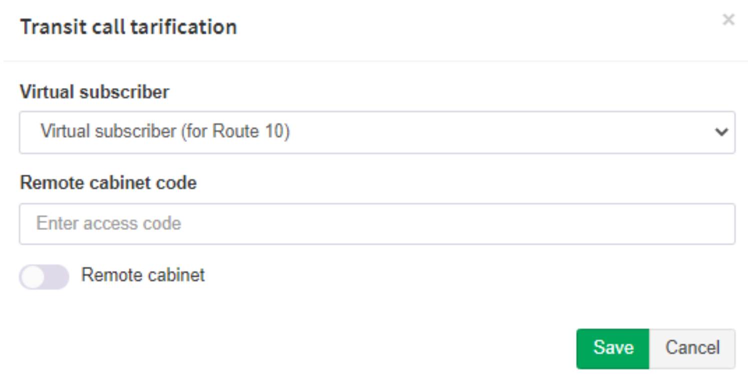


Figure 4.11.49.5

In the **Virtual subscriber** list, select the virtual subscriber created earlier. Click **Save**.

When you have the network of PBXs (telephone exchanges) and only single PBX is used to access to PSTN, and CDR data is collected from this PBX, to configure a route to another PBX of your telephone network, you should select the route and click on the **Transit call tariffication** icon. The **Transit call tariffication** window appears as shown in Figure 4.11.49.5.

Turn on the **Remote cabinet** switch and enter the access code in the **Remote cabinet code** box if it is used for the route. Click **Save**. These settings allow Tariscope to write data from the **CLID** field, which contains an extension of the remote PBX, instead of the numbers of the incoming route and trunk. As a result, you will have correct rating for subscribers from the remote telephone system.

If you wish to manage a specific route, for example, to disable it when the route credit was exhausted and your Tariscope license includes the restrictions feature for

Routes or **All** options, select the route and click on the **Restrictions** icon on the toolbar (Figure 4.11.49.1). The **Restrictions** window appears as shown in Figure 4.11.49.6.

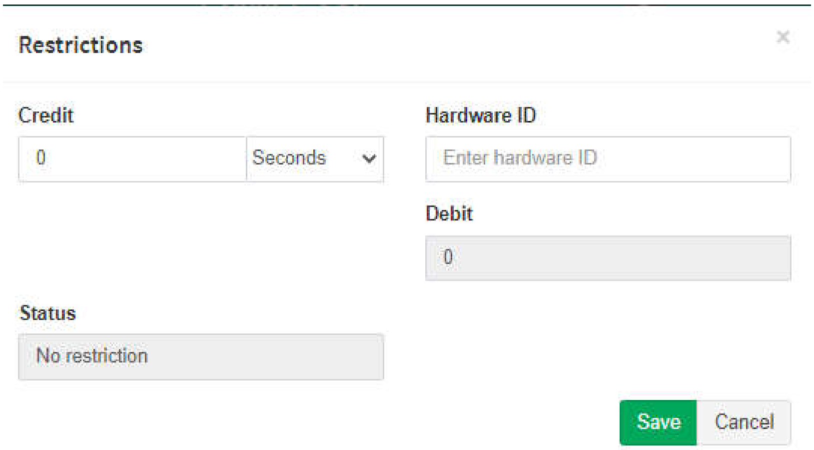


Figure 4.11.49.6

In the **Credit** box, type a value of credit in the seconds or money. Money is specified in the main currency. This feature is applied only for Tariscope with the restriction feature.

In the **Hardware ID** box, type parameters that will be transferred in the script to apply the restriction feature. It may be a single character that will be analyzed by the script and depending on its value the appropriate command will be performed.

The **Debit** box is used for informational purposes. It is filled by Tariscope when it charges the call cost or duration for this route. The box is cleaned automatically after a specified period.

The **Status** box is displayed the current status of restriction: **No restriction** or **With restriction**.

To keep settings, click **Save**.

If you have a few routes with different parameters, repeat the input for other routes.

If a specific route contains trunks which need to rate using other rates than for the route, create a new trunk and enter its parameters.

To create a new trunk, in the route table, select the required route and click **Add** on the toolbar. The **Creating** window (Figure 4.11.49.2) appears where the **Trunk** box is displayed instead of the **Route** box. All settings in this window are similar to those described above.

For IP telephony devices such as Cisco Unified Communications Manager, Asterisk, and others, in the **Creating** window (Figure 4.11.49.2) the **Gateway** box is displayed instead of the **Route** box. All settings for gateways are similar to routes' settings.

If necessary, to delete the route, trunk, or gateway, select it and, click **Delete** on the toolbar.

To change parameters of route or gateways, select the required item and click **Edit**.

If you already have the processed database of calls in Tariscope, but has not yet been configured routes / gateways, you can use the automatic determination feature of route (gateways) and access codes to them. To do this, on the toolbar, click the **Auto fill Routes and Gateways** icon.

4.11.50. Prefixes

Call rating is executed in Tariscope only when the system finds appropriate code and its parameters for the dialed number in the provider data. Sometimes the dialed number contains the specific code before the telephone number that is absent in the provider data. You can change the code to codes used in the provider data using prefixes.

In most cases, the user does not need to use prefixes.

To configure prefixes, click on the **Prefixes** subbranch of the desired telephone system. The **Prefixes** page appears, an example of which is shown in Figure 4.1.50.1.

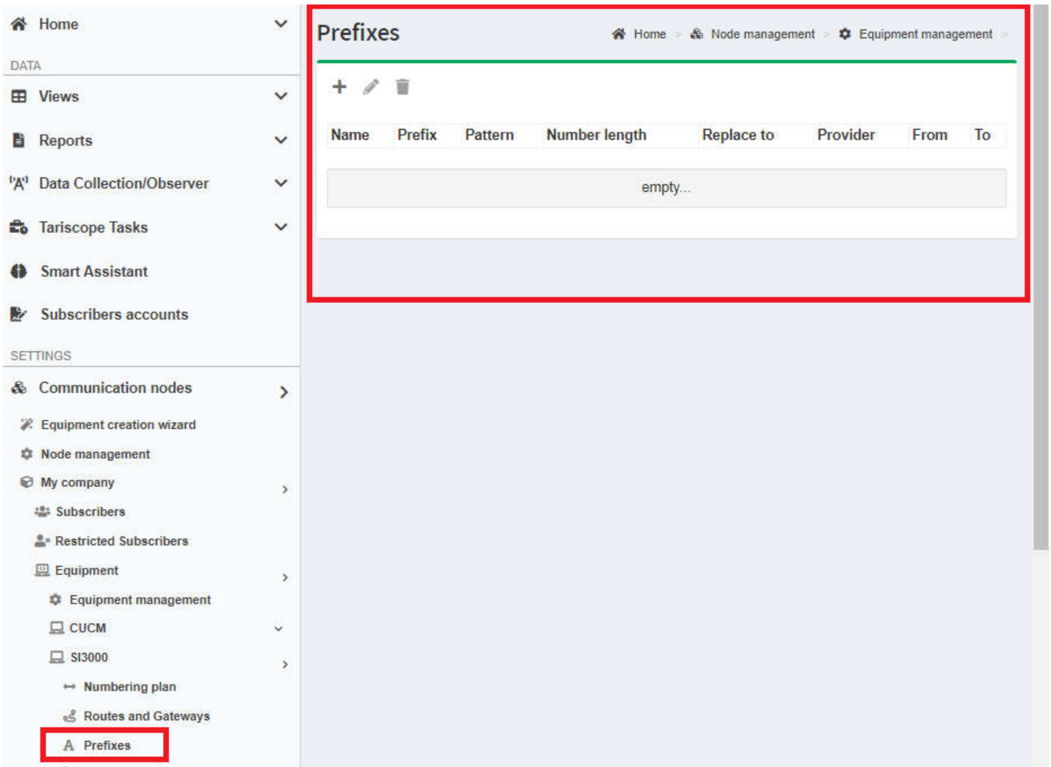


Figure 4.11.50.1

To create a new prefix, click on the **Add** icon on the toolbar. The **New prefix** window appears as shown in Figure 4.11.50.2.

In the **Name** box, type a name that will be assigned for the prefix.

If you want to keep the phone number in the Tariscope database with changes after applying the prefix, turn on the **Save changed number** switch.

To select a group of codes you can use templates. In this case, turn on the **Prefix code is mask** switch.

In the **Prefix** box, type a set of digits, which is located at the beginning of the dialed telephone number, and which should be replaced by the code that is entered in the **Replace to** box.

In the **Replace to** box, type a set of digits that will be used to change the prefix entered in the **Prefix** box.

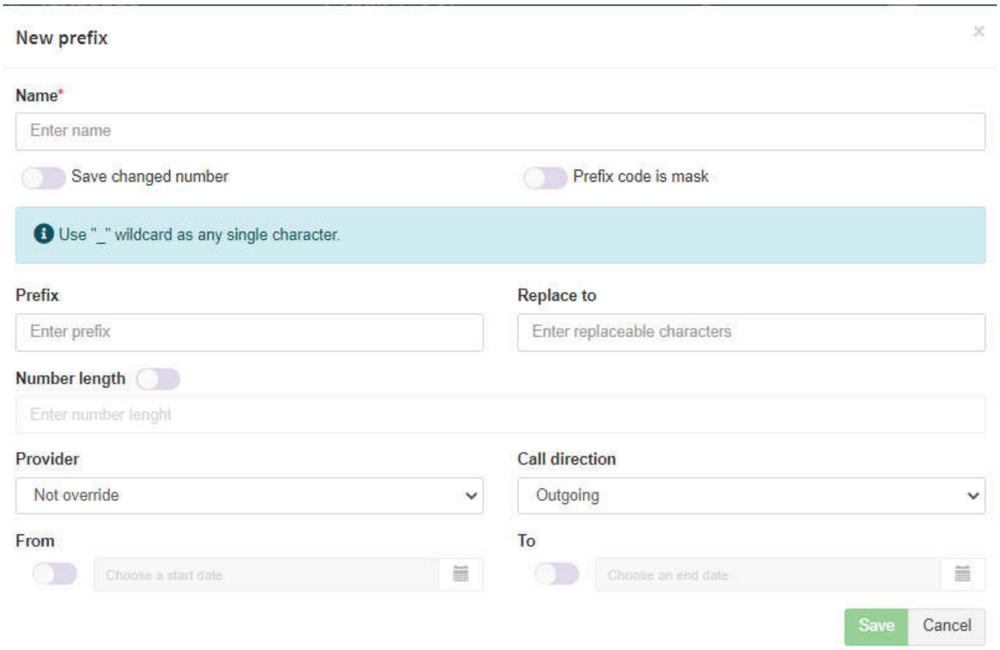


Figure 4.11.50.2

If necessary to use the prefix only to the dialed phone number of a certain length, turn on the **Number length** switch and specify the desired length in the box.

If necessary to rate calls made with the use of this prefix on a specific rate plan, in the **Provider** list, select the desired telecommunications service provider. If the provider is absent, you should create it.

To define for which type of telephone numbers the prefix rule will be applied, the **Call direction** list is used. If the **Outgoing** item is selected in the list, the prefix rule will be applied to dialed numbers of outgoing calls. If the **Incoming** item is selected in the list, the rule is applied to telephone number of caller for incoming calls.

To specify the prefix period, select the desired dates in the **From** and **To** calendar boxes. If the prefix should be permanent, do not specify dates in these boxes.

Click **Save**. A new row appears in the prefix table.

To change prefix parameters, select the desired row in the prefix table and click **Edit**.

To delete a prefix, select the required row in the prefix table and click **Delete**.

4.11.51. Restriction classes

This configuration page is applied only for Tariscope with the restriction feature. If your Tariscope license has not the restriction feature, you can skip this article. The **Restriction classes** page allows to set the restriction group, classes of service, and their links to the call categories for each telephone system.

To configure restriction classes, click on the **Restriction classes** subbranch of the desired telephone system. The **Restriction classes** page appears. An example of the page is shown in Figure 4.11.51.1.

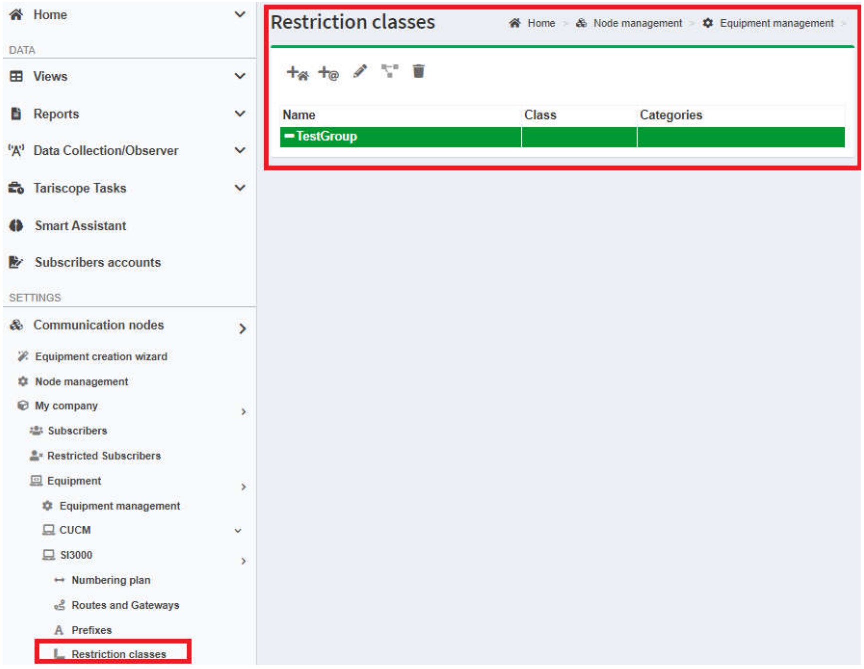


Figure 4.11.51.1

The following concepts are used for this configuration page.

Restriction group. This is a set of rules, according to which a class of service is selected, depending on the limitations set for a subscriber, and the status of expense for these limitations. A list of the restriction groups is common to all PBXs of communication node. But the elements of a group and their corresponding classes of service are linked to the PBX. You must create at least two elements of a restriction group. For example, one element includes the class of service that permits phone calls, and another element that prohibits such calls. Groups of restrictions are linked to the subscribers.

Class of service (COS). This is an identifier that is used by a particular type of telephone system to determine the access rights to various areas. COS is passed to the restriction script, which uses it in the process of performance. The format and value of COS are depended on the type of PBX.

For example: The Calling Search Space (CSS) is used as COS in Cisco Unified Communications Manager (CUCM).

For Communications Server 1000 (CS1000) by Avaya - Nortel you can use COS, NCOS, TGAR.

Call category. This is a parameter that is assigned to each call by the rating module of Tariscope in accordance with the call direction. One of purposes of the categories is to define a type of telephone traffic, which should be considered to set the restrictions. A list of categories can be obtained on the **Categories** configuration page. You can link country codes, area codes or telephone codes with categories using **Providers and rates** → your provider → **Outgoing** or **Incoming** → **Destination codes**.

The **Restriction classes** page allows to configure COS for each combination of available categories of calls to subscribers. In the simplest case, each group of classes contains two elements: "everything is enabled" with a selection of **All categories** and "everything is disabled" when no categories are selected. If you want to restrict the various categories of calls individually, you need to create the elements of restriction group with all possible combinations of categories and corresponding COS. Tariscope automatically selects an element that is suitable for the current status of the subscriber restrictions, and pass it to the script.

To add a new group of the restriction classes, click on the **Add group** icon on the toolbar. The **Restriction group** window appears, where you need to enter a group name and click **Save**. A new row appears in the table.

To add a new element in the group, select the group and click on the **Add class** icon on the toolbar. The **Restriction class** window appears, where you should type the restriction class name in the **Name** box, and a value of the class of service in the **Class** box. Click **Save**. A new row appears in the table.

You can assign any name for each group and class.

To assign a category for the desired class, select the class and click on the **Configure categories** icon on the toolbar. The **Categories** window appears. It contains a list of categories that you created in Tariscope. Turn on the desired categories for the selected class and click **Save**.

Repeat these actions for other classes.

4.11.52 Equipment creation wizard

In the previous sections we considered the settings of telephone system and its parameters in Tariscope. At the same time, Tariscope has an assistant which helps to do this. Tariscope Assistant appears after the first start of Tariscope. You can use its help or refuse it by performing all the settings manually. If you have a few telephone systems, you can use Tariscope Assistant many times.

To choose Tariscope Assistant, select in the menu: **Communication nodes → Equipment creation wizard**. The **Equipment creation wizard** page appears as shown in Figure 4.11.52.1.

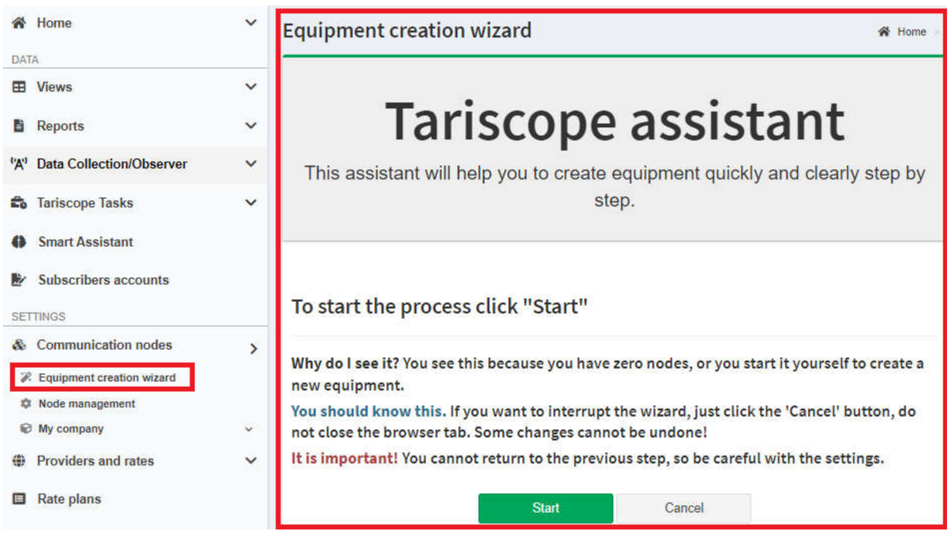


Figure 4.11.52.1

It is an information page. Read the information and click **Start**. The wizard page moves to the first step. An example of the page is shown in 4.11.52.2.

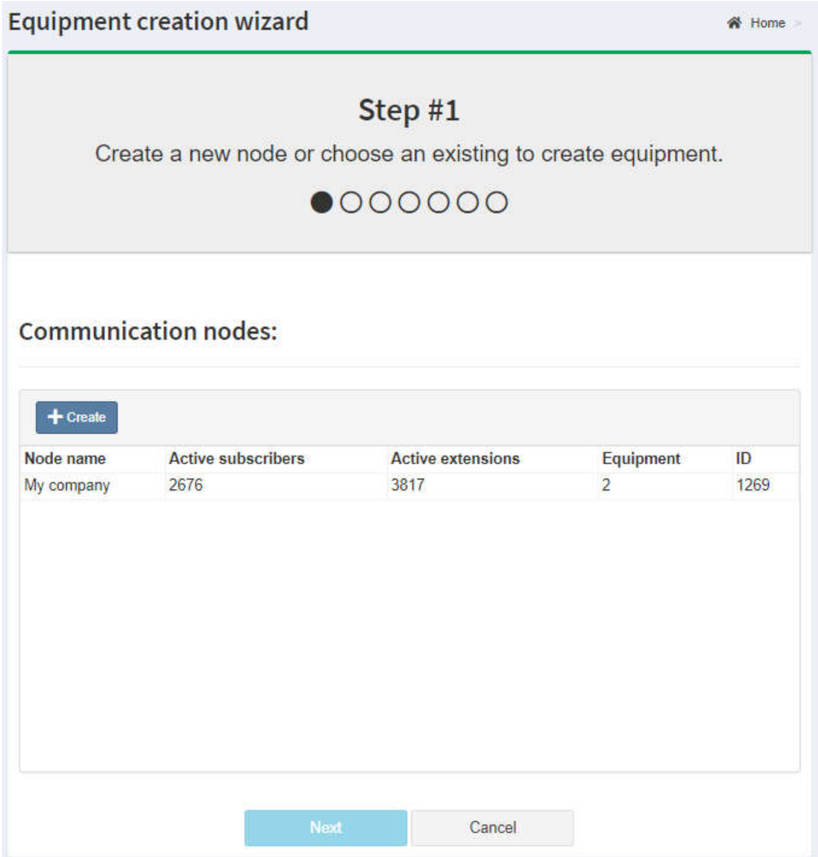


Figure 4.11.52.2

The page allows you to create a new telecommunications node in Tariscope. In Figure 4.11.52.2, there is the node named ‘My company’. To create a node, click on the **Create** button. The **New node** window appears, where you should enter a node name. Click **Save**. A new row appears in the **Communication nodes** table. You can create any number of the nodes. Click **Next** to continue the work. The **Equipment creation wizard** page will be as shown in Figure 4.11.52.3.

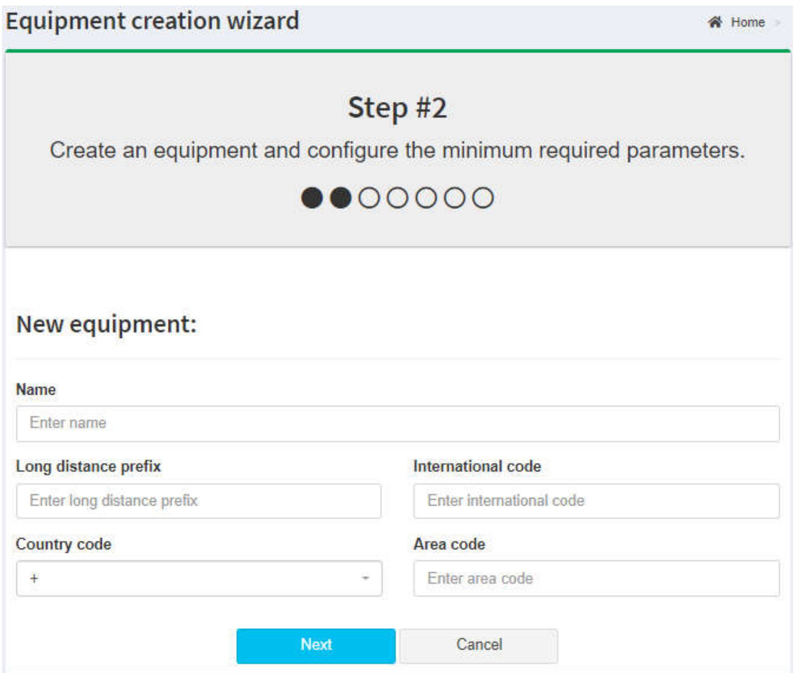


Figure 4.11.52.3

This wizard step allows you to create a new equipment. Usually, it is a telephone system. But sometimes, it may be data equipment.

In the **Name** box, enter the telephone system name. It can be arbitrary.

In the **Long distance prefix** box, enter the prefix. The Long distance prefix is a prefix that allows to make telephone call outside a specific local area, usually to another city. In most countries it is equal 0.

In the **International code** box, enter this code. The International code is a prefix that allows to make call from your country to another country. In most countries it is equal 0.

In the **Country code** list, select your country code. The country code is a numeric code which allows to make call to a specific country or area.

In the **Area code** box, enter your area code.

The **Long distance prefix, International code, Country code, and Area code** affect the correct recognition of long-distance and international calls in the dialed number, and consequently on their rating.

Click **Next**. The **Equipment creation wizard** page will be as shown in Figure 4.11.52.4.

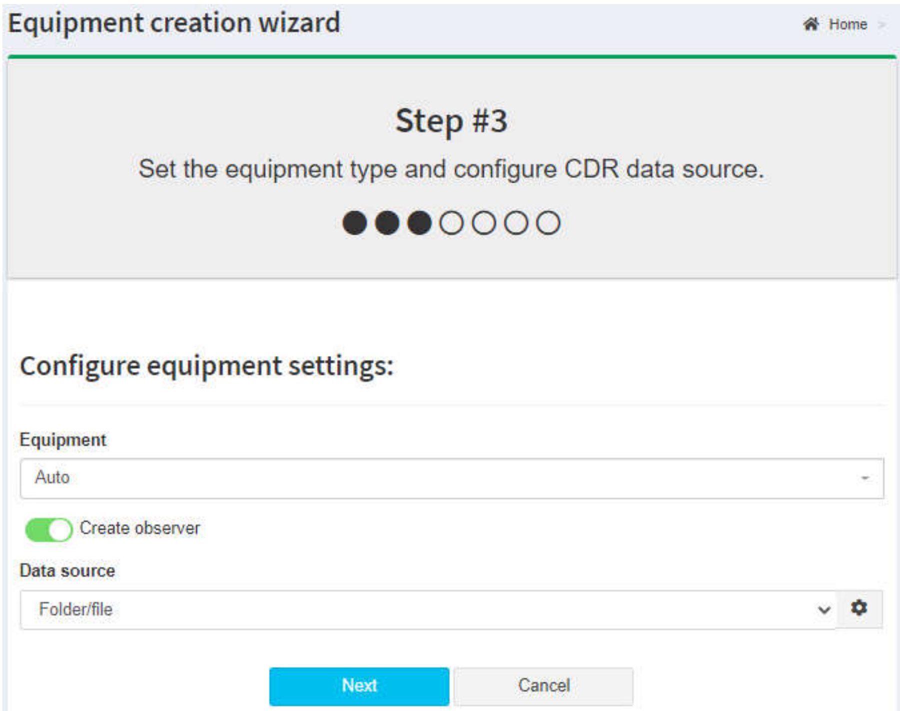


Figure 4.11.52.4

In the **Equipment** list, select an item that correspond to your telephone system.

Usually, Tariscope collects call data using the Tariscope Observer service. By default, the **Create Observer** switch is on. If you do not want to use Tariscope Observer to collect call data, turn off the switch.

In the **Data source** list, choose the data source that Tariscope Observer will use to collect CDR. Each data source has specific settings. To set them, click on the **Advanced settings** button located on the left from the **Data source** list. See the description of each data source settings in the Section 4.13. Click **Next**. The **Equipment creation wizard** page will be as shown in Figure 4.11.52.5.

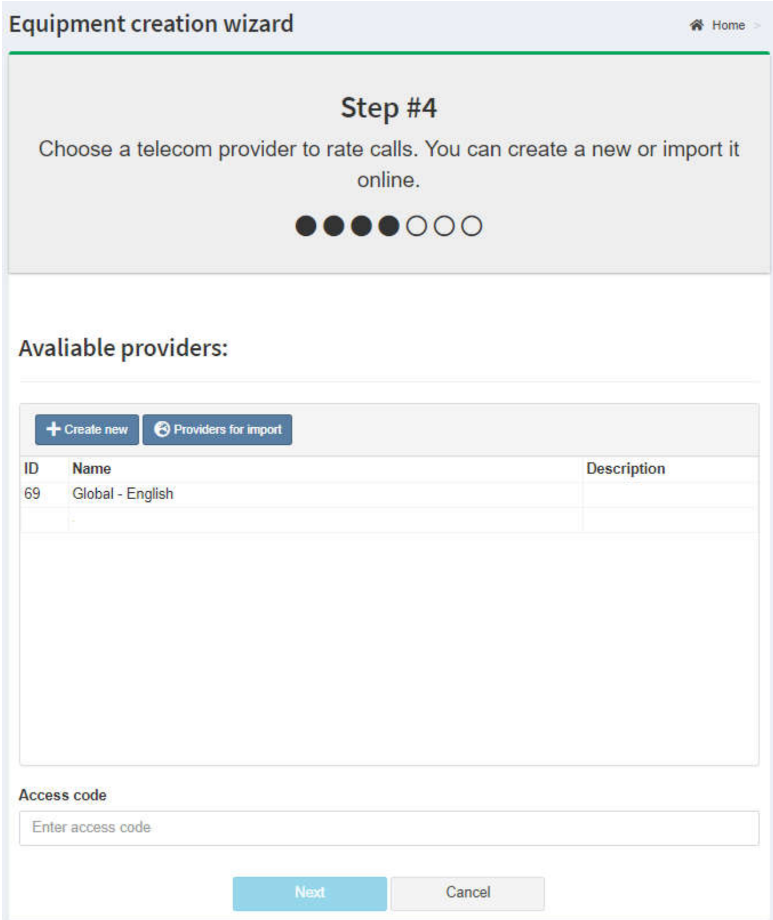


Figure 4.11.52.5

This step allows you to choose, create or import a telecom provider whose rates will be used. If you created the telecom providers earlier, select it from the table. To create a new telecom provider whose rates should be used, click on the **Create new** button. The Tariscope site contains information on some telecom providers. You can use them. To select the desired provider, click on the **Provider for import** button and choose a provider from the appeared window.

If your telephone system is used access code to make outgoing calls, enter the access code in the **Access code** box. You can enter a few codes using a semicolon.

Click **Next**. The **Equipment creation wizard** page will be as shown in Figure 4.11.52.6.

This step provides a creation of numbering plan that is used to detect extensions (internal telephone numbers) in CDRs. If your extensions are in the range of 100 to 9999, click **Next**. Otherwise, turn of the **Default range** switch. Click on the **Add** button to add a new range. The window appears as shown in Figure 4.11.48.2. See the description of settings in the window in the Section 4.11.48.

After you have added the numbering plan, click **Next** (Figure 4.11.52.6). The **Equipment creation wizard** page will be as shown in Figure 4.11.52.7. This configuration step allows you to add prefixes if they are required.

Call rating is executed in Tariscope only when the system finds appropriate code and its parameters for the dialed number in the provider data. Sometimes the dialed number contains the specific code before the telephone number that is absent in the provider data. You can change the code to codes used in the provider data using prefixes.

In most cases, the user does not need to use prefixes. If you do not need to use prefixes, skip this step.

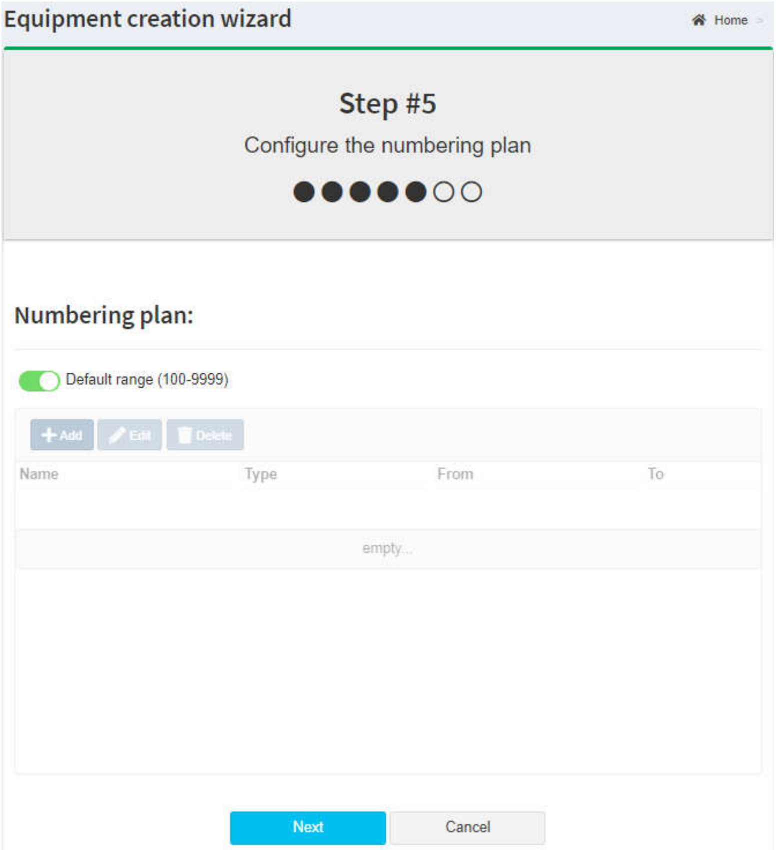


Figure 4.11.52.6

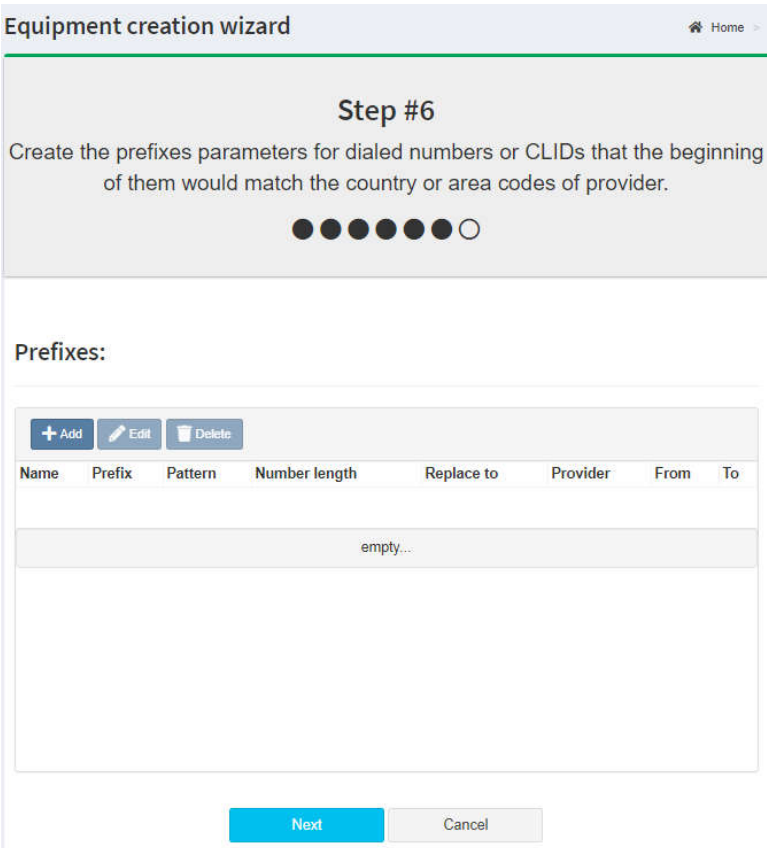


Figure 4.11.52.7

To create a prefix, click on the **Add** button. The **New prefix** window appears as shown in Figure 4.11.50.2. See the description of the window in the Section 4.11.50.

To continue the configuration, click **Next** (Figure 4.11.52.7). The **Equipment creation wizard** page will be as shown in Figure 4.11.52.8.

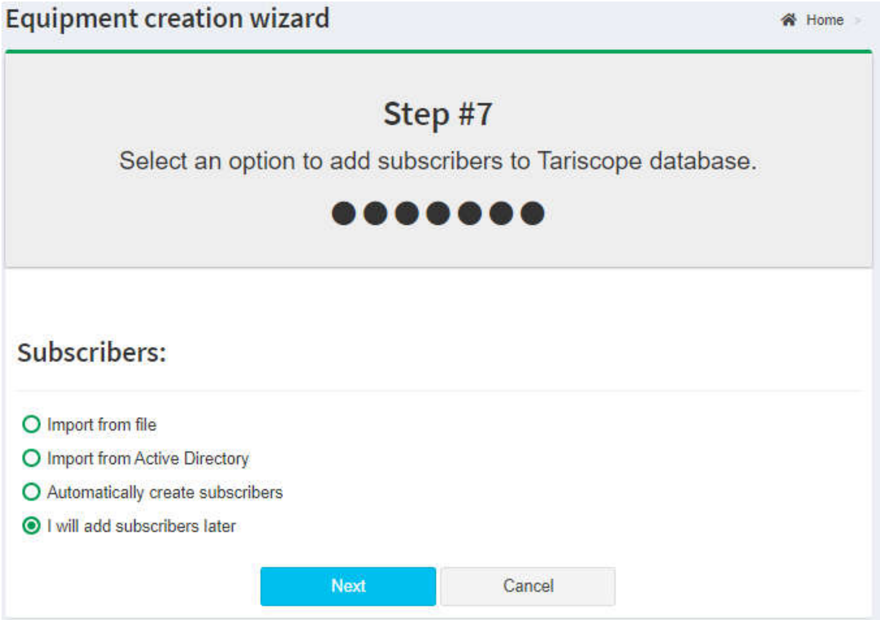


Figure 4.11.52.8

This step is the last one in the wizard. It allows you to add subscriber data into the Tariscope database. There are some ways to do this:

- **Import from file**. The subscriber data are imported from files. Supported the following formats: Microsoft Excel 2007, Microsoft Excel 2003, Microsoft Access 2007, CSV, dBase, Text, Tariscope 2.x.
- **Import from Active Directory**. The subscriber data are imported from Microsoft Active Directory or LDAP directory.
- **Automatically create subscribers**. A part of subscriber data is automatically created during CDR processing. A subscriber phone number with 'a' prefix is used for a subscriber name.
- **I will add subscribers later**. This means that the step will skip. It is the default option.

See the description of each option in the Section 4.12.

Click **Next**. The **Completion** page appears. Click on the **Complete** button.

4.12. Subscribers

In Tariscope a subscriber (or customer) relates to a telecommunications node. The telecommunications node can contain one or more telecommunications equipment. Minimally telecommunications node can consist of a single telecommunications equipment. PBX, telephone exchange or data transmission equipment can be considered as the telecommunications equipment. A subscriber can have one or more extensions (phone numbers) or IP addresses belonging to one or more telephone systems. A subscriber can have minimally one extension (phone number) or one IP address.

There are different methods to enter subscribers' data into the Tariscope database.

- **Import from file**. The subscriber data are imported from files. Supported the following formats: Microsoft Excel 2007, Microsoft Excel 2003, Microsoft Access 2007, CSV, dBase, Text, Tariscope 2.x.
- **Import from Active Directory**. The subscriber data are imported from Microsoft Active Directory or LDAP directory.
- **Automatically create subscribers**. A part of subscriber data is automatically created during CDR processing. A subscriber phone number with 'a' prefix is used for a subscriber name.
- **Manual input**. You can manually enter data on one or a group of subscribers.

It is possible to choose the desired input method during the **Equipment creation wizard** (Section 4.11.52) or on the Tariscope menu.

On the menu, select: **Communication nodes** → the desired telecommunications node → **Subscribers**. The **Subscribers** page appears. An example of the page is shown in Figure 4.12.1.

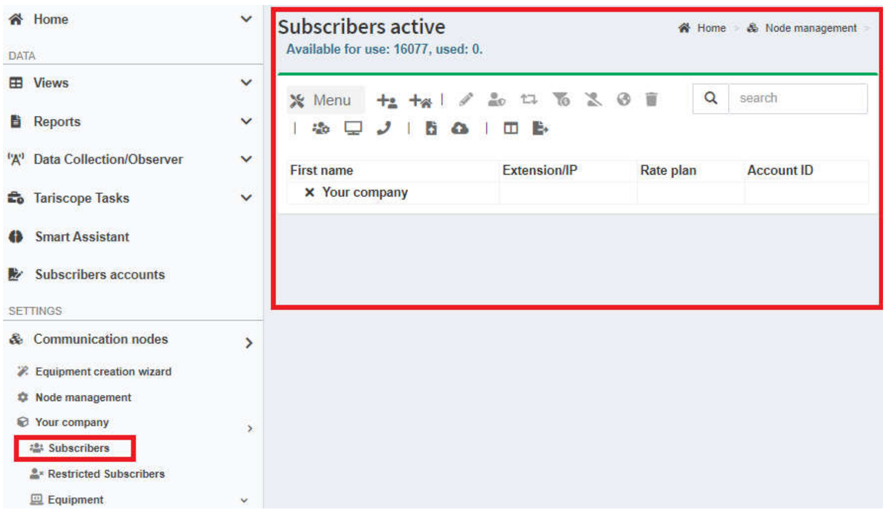


Figure 4.12.1

The page contains the toolbar with the following icons:

- **Menu**. It opens the menu which duplicates the toolbar icons.
- **New subscriber**. It allows you to manually add a new subscriber (customer).
- **New group**. It allows you to create a new subscriber group. Tariscope supports hierarchical structure of your company.
- **Edit**. This choice provides editing the selected element of the subscriber table.
- **Edit heads of the group**. The icon is active when a row with a group was selected. It allows you to assign heads of the group. The heads can view class of subscribers of the group via the Tariscope Personal Area.
- **Move**. You can move the selected element to another place of the table.

- **Restrictions**. Allows you to set restrictions for the selected element. The feature is available only for a Tariscope license with the restriction feature.
- **Disconnect subscriber**. Allows you to point Tariscope that the selected subscriber will not to be active.
- **Access to the Personal Area**. Allows you to set a login and password which the subscriber will use to access to the Tariscope Personal Area.
- **Remove**. Provides a deletion of the selected element of the table.
- **Whom to show**. Provides a choice which subscribers should be displayed in the table: all, active, or inactive.
- **How to show**. Allows you to choose the desired way to display a subscriber tree, subscriber table, or extension table.
- **Show unused extensions/IP**. If you created the numbering plan, the choice of the icon allows you to get a list of unused extensions or IP addresses.
- **Import from file**. Provides an import of subscribers' data from the file.
- **Import from Active Directory**. Provides an import of subscribers' data from your Active Directory.
- **Settings columns visibility**. Allows you to choose the desired fields which can be displayed in the table.
- **Export of the table**. Allows you to export the subscriber table into the external file.

4.12.1. Subscriber data input from Active Directory

Active Directory (AD) is a hierarchical arrangement of information about objects created by Microsoft for Windows domain networks. Active Directory makes use of Lightweight Directory Access Protocol (LDAP) versions 2 and 3, Microsoft's version of Kerberos, and DNS. The objects fall into two broad categories: resources and security principals (user or computer accounts and groups).

Tariscope allows you to import and synchronize the directory of subscribers from the enterprise Active Directory, eliminating the need for a separate maintaining the subscribers database. All changes to the structure of departments, extensions (internal phone numbers), contact information of the subscribers made in Active Directory will be reflected in an appropriate table of Tariscope database and immediately taken into account in the processing of new CDRs.

An example of Active Directory is shown in Figure 4.12.1.1.

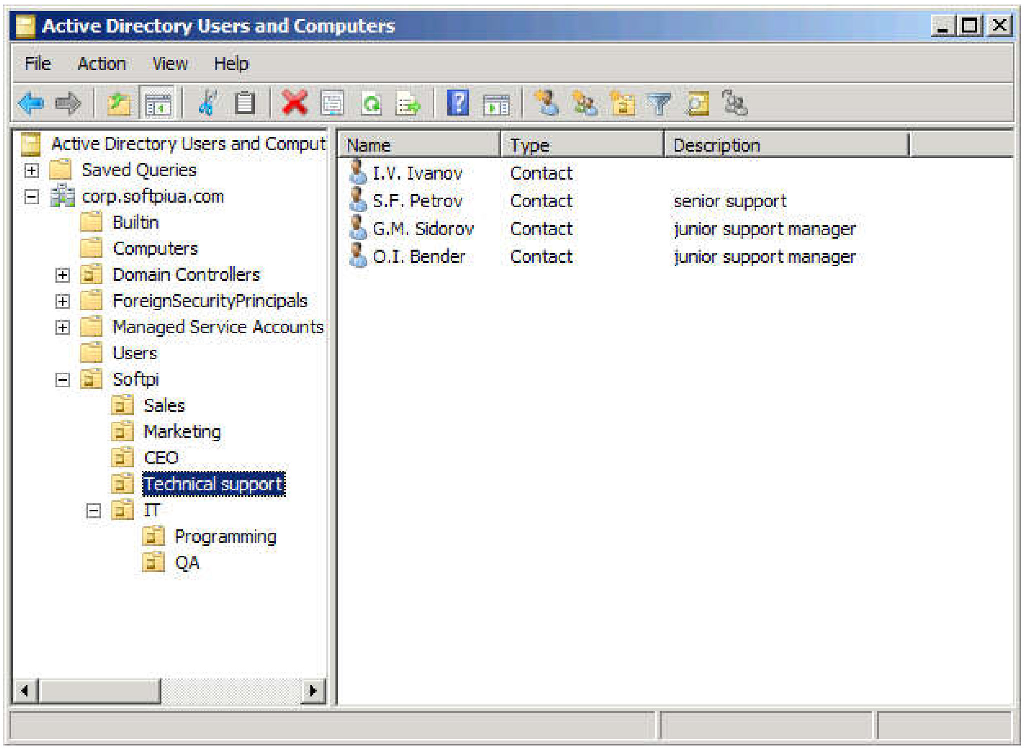


Figure 4.12.1.1

For all subscribers in the Active Directory are given surname, first name, and a list of phone numbers belonging to a subscriber. The list of major fields of Active Directory used for synchronization with Tariscope is given in the table below.

#	**Name**	**Description**
1	sn	Surname
2	givenName	First name
3	postalCode	Postal Code
4	City	City
5	streetAddress	Street
6	physicalDeliveryOfficeName	Office name
7	mail	Email
8	whenCreated	When created
9	Phone	Phone number
10	Mobile	Mobile number
11	telephoneNumber	Second phone number

To synchronize data from Active Directory into Tariscope, you should create a profile. To do this, in the Tariscope menu, select **Additional options** → **Integration** → **Active Directory**. The **Active Directory** page appears as shown in Figure 4.12.1.2.

The **Active Directory** page contains the toolbar with the following icons:

- **New profile**. Allows you to create a new profile for data synchronization.
- **Start import**. Data synchronization starts.
- **Delete**. Allows you to delete the selected profile.

- **Export of the table**. Allows you to export the Active Directory table into the external file. Supports the following formats: Excel, HTML, CSV, PDF.

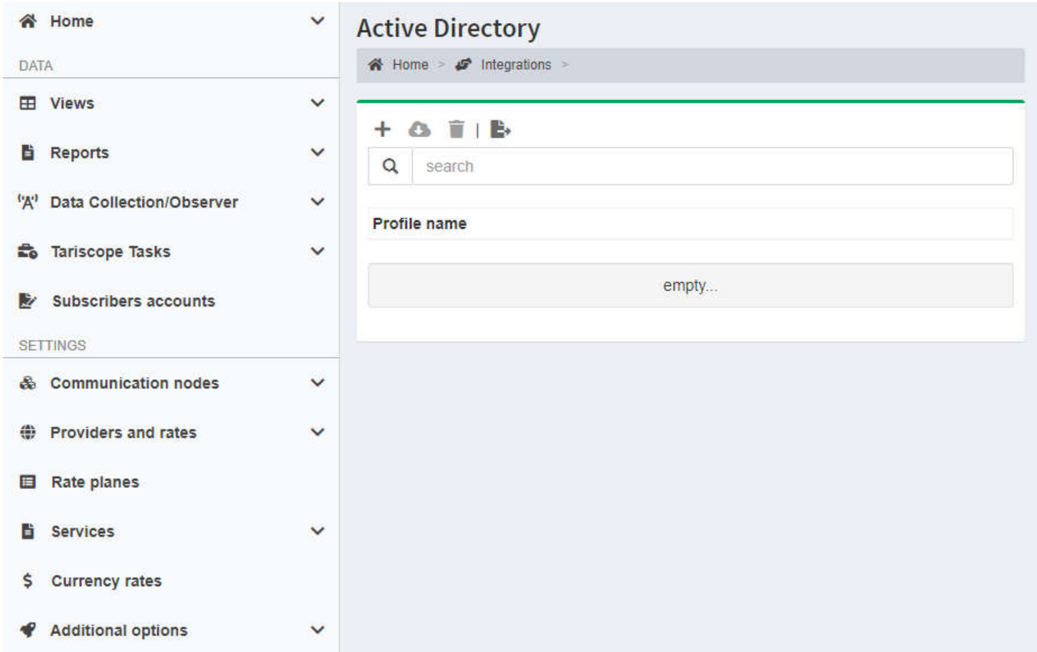


Figure 4.12.1.2

To create a new profile, click on the **New profile** icon on the toolbar. The **New synchronization profile for Active Directory** page appears as shown in Figure 4.12.1.3.

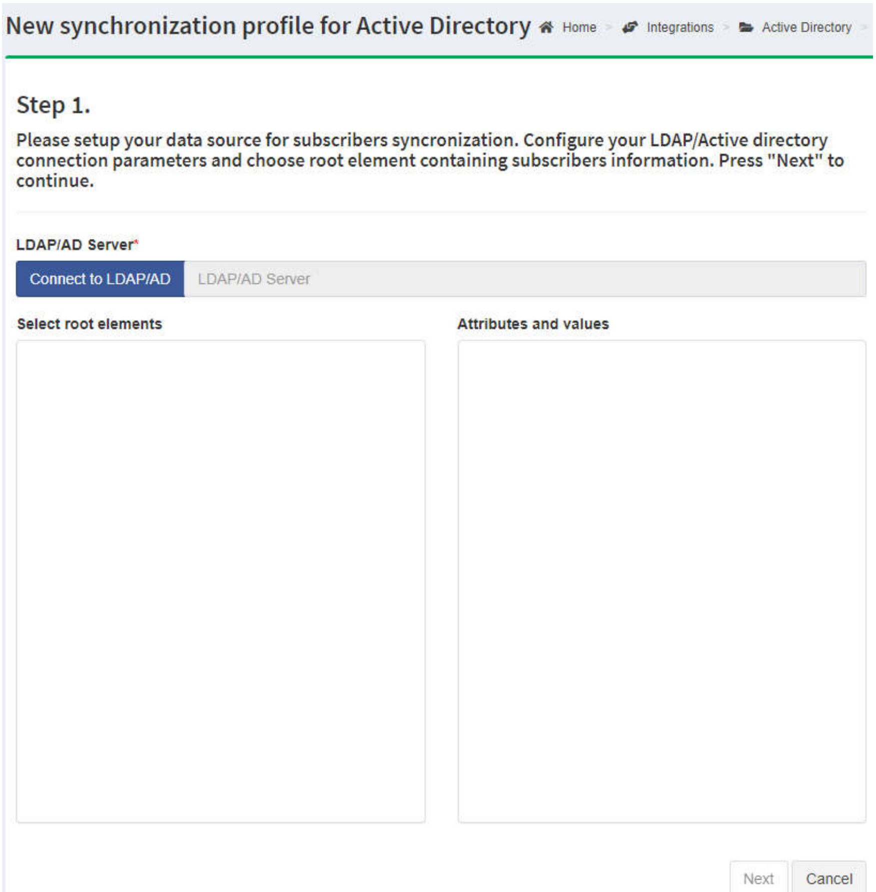


Figure 4.12.1.3

Click on the **Connect to LDAP/AD** button. The **Connect to LDAP/AD** page appears as shown in Figure 4.12.1.4.

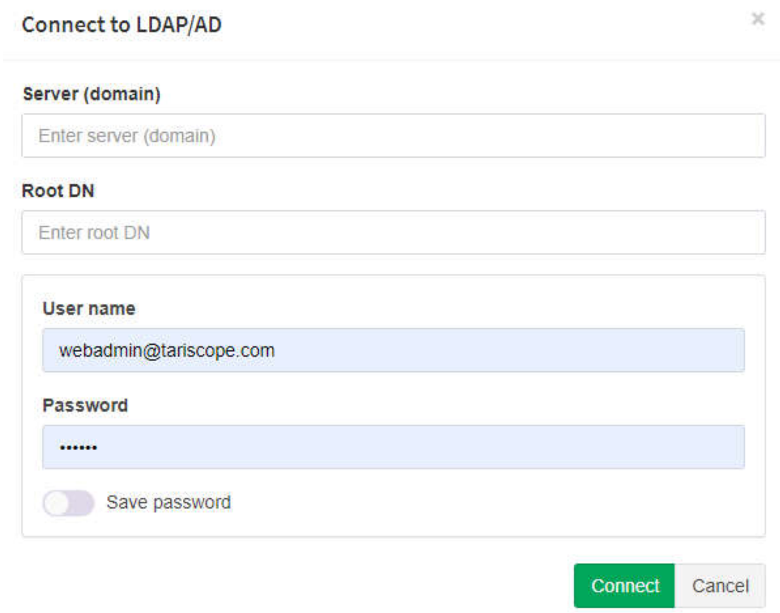


Figure 4.12.1.4

In the **Server (domain)** box, enter IP address of the AD server or its domain name.

In the **Root DN** box, enter the root element of the Active Directory service.

In the **User name** box, enter a username.

In the **Password** box, enter the password.

If you want to keep the password, turn on the **Save password** switch.

Click **Connect**. If you have correctly entered the connection parameters, the configuration page will be like as shown in Figure 4.12.1.5.

Using the switches from the **Select root elements** list, select the elements which should be imported. The page will be like it is shown in Figure 4.12.1.6.

Click **Next** to move the second step of the configuration (Figure 4.12.1.7).

On this configuration step, you should select a telecommunications node, company, and subscriber group where data from AD will be imported. This choice is performed in the **Select group** list.

To assign a rate plan for subscribers, select it in the **Plans** list.

If a numbering plan was created in the Tariscope system and it should be considered when importing subscribers, turn on the **Use numbering plans** switch.

If you want to import data only from the Users folder of the Active Directory and import the department names, turn on the **Skip default AD containers** switch.

If you do not need to import subscribers from AD that do not have extensions, turn on the **Skip subscribers without extensions** switch.

If you use a numbering plan in Tariscope and do not want to import subscribers whose extensions are not included in this numbering plan, turn on the **Skip extensions without numbering plan** switch.

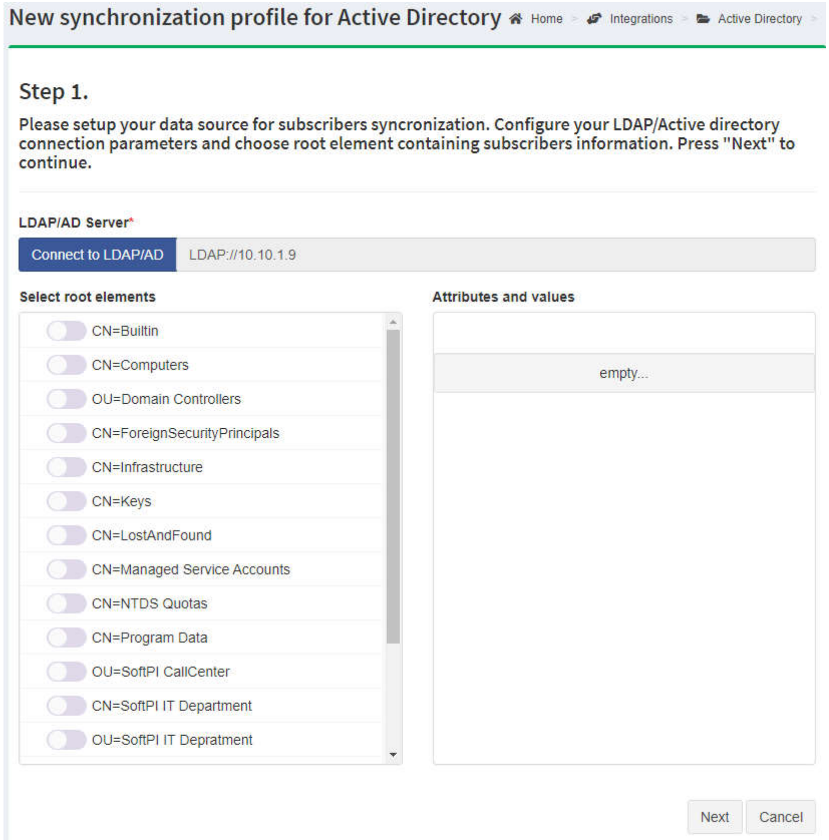


Figure 4.12.1.5

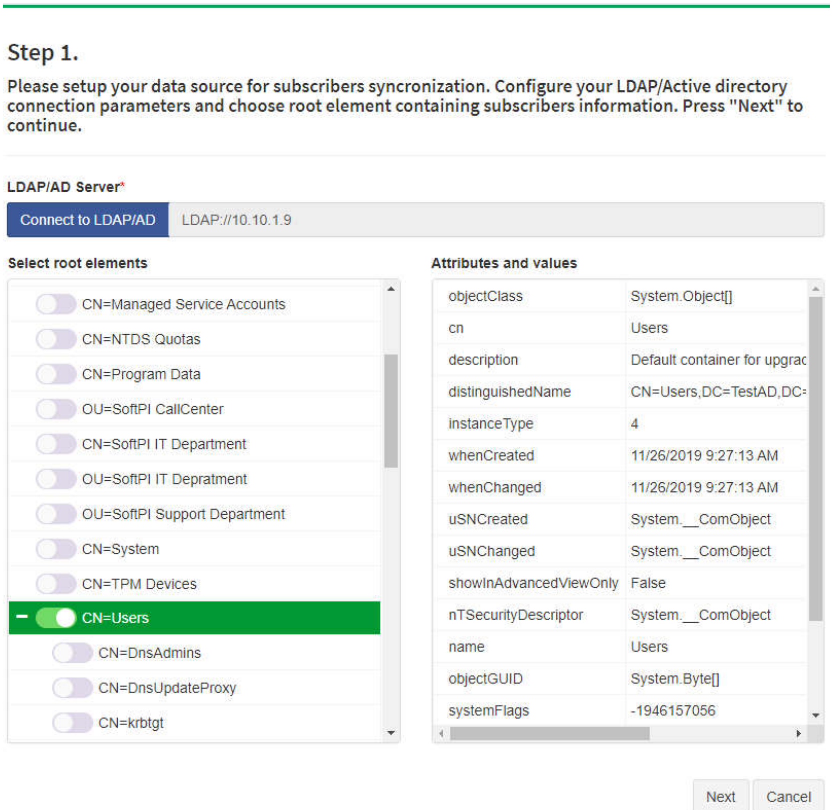


Figure 4.12.1.6

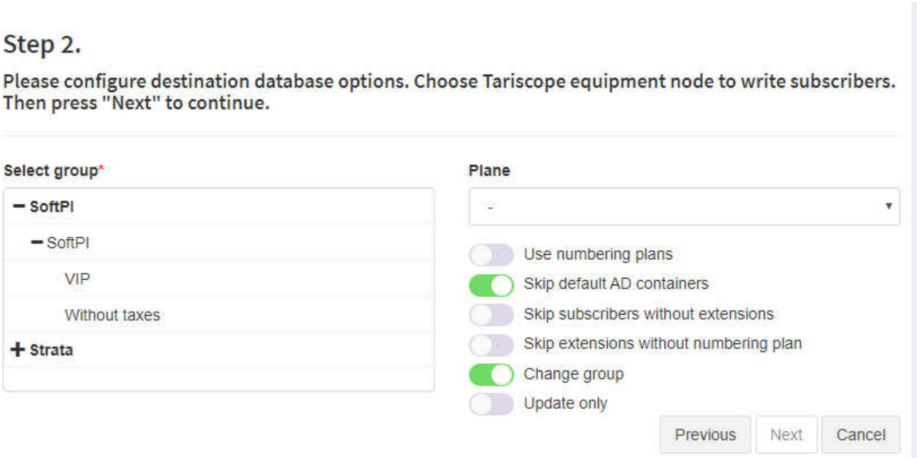


Figure 4.12.1.7

If Tariscope contains subscribers that have been moved to another group in AD, and you want such subscribers to be moved to these groups in Tariscope too, turn on the **Change group** switch.

If the synchronization profile will be used only to receive data for new subscribers and you do not need to update the data on subscribers that are already in the Tariscope database, turn on the **Update only** switch.

Click **Next**. The page displays the third step of the profile configuration (Figure 4.12.1.8).

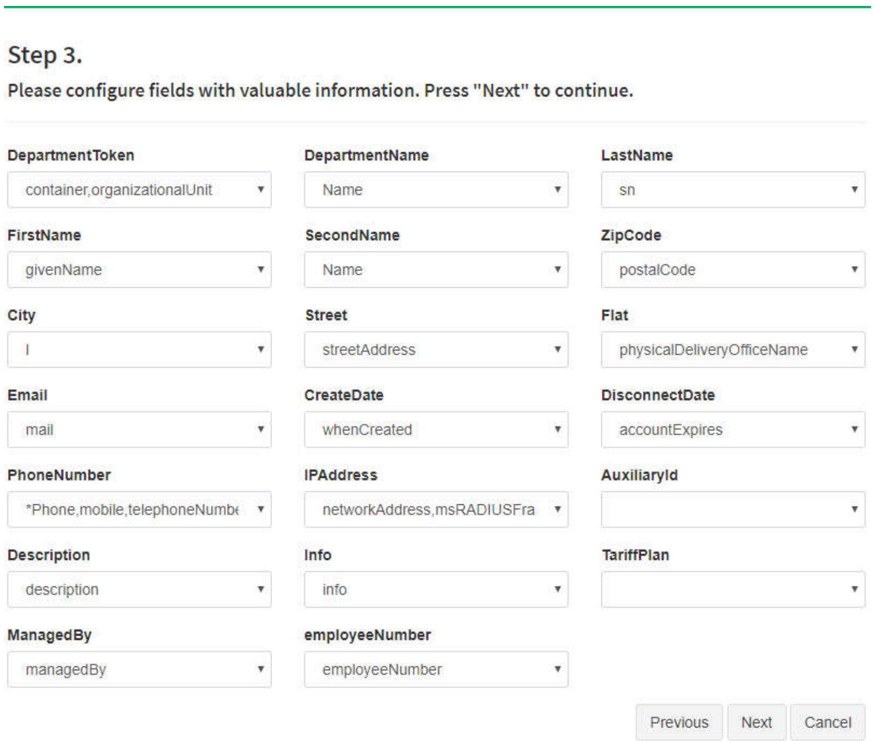


Figure 4.12.1.8

You need to link the AD fields with the Tariscope fields. Tariscope tries to independently link the existing fields. Check that the data binding is correct and, if necessary, make changes by selecting the desired value from the list. Click **Next**.

The page of the 4th step of setting is shown in Figure 4.12.1.9.

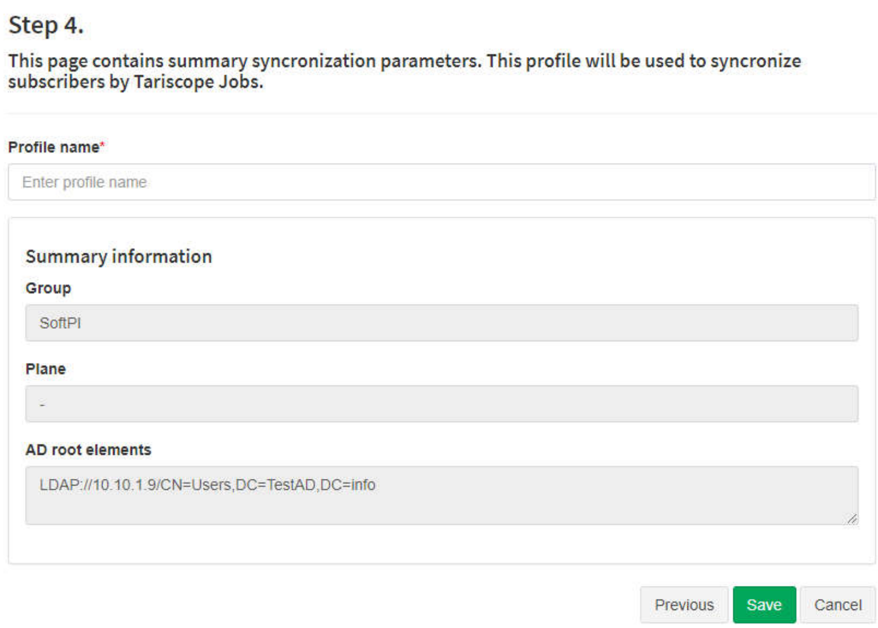


Figure 4.12.1.9

In the **Profile name** box, enter the required name.

The **Summary information** section of this page displays some of the previously set sync options.

Click **Save**. The name of the created synchronization profile will be displayed in the table of the Active directory page (Figure 4.12.1.10).

Figure 4.12.1.10

To import data about subscribers from AD, click on the **Start import** icon on the toolbar (Figure 4.12.1.11). Tariscope will perform such an import.

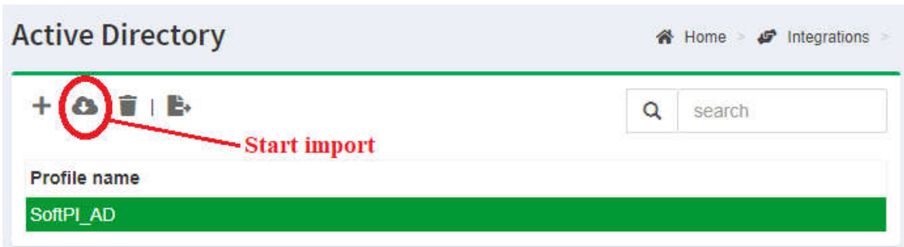


Figure 4.12.1.11

If you need to periodically synchronize data between AD and Tariscope, you should use the Tariscope Tasks by creating a corresponding task in it, in which you specify the required data synchronization profile created on this settings page.

4.12.2. Subscriber data import from external files

To import the subscriber data from external files, on the **Subscribers** page, select the subscriber group to which you want to import data.

Click on the **Import from file** icon. The Import wizard page appears as shown in Figure 4.12.2.1).

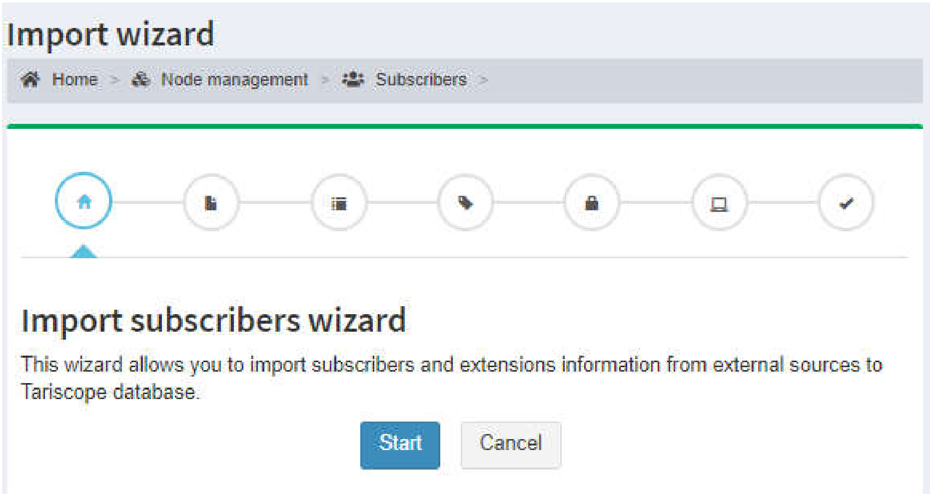


Figure 4.12.2.1

Click **Start**. The wizard window will be as shown in Figure 4.12.2.2.

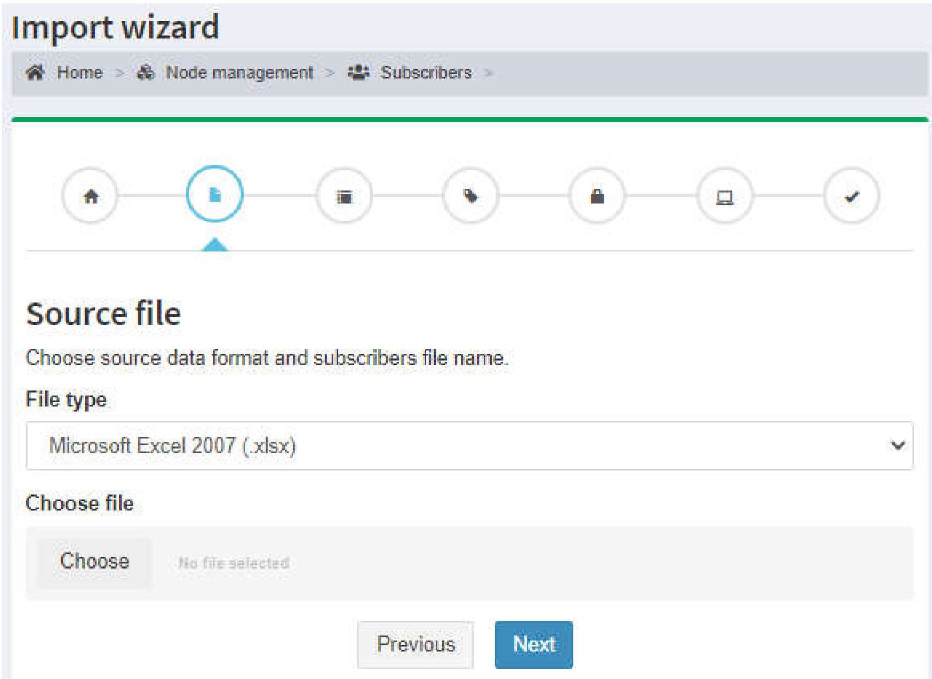


Figure 4.12.2.2

This step provides a selection of the external file format that contains information about subscribers. The import is available from the following file formats:

- Microsoft Excel 2007 (xlsx).
- Microsoft Excel 2003 (xls).
- Microsoft Access (mdb).
- Microsoft Access 2007 (accdb).

- Comma separated (csv).
- Text (txt).
- dBase III (dbf).
- Tariscope 2.8 (mdf).

After selecting the desired file format, click on the **Choose** button and select the required file. Click **Next**. The wizard will be as shown in Figure 4.12.2.3.

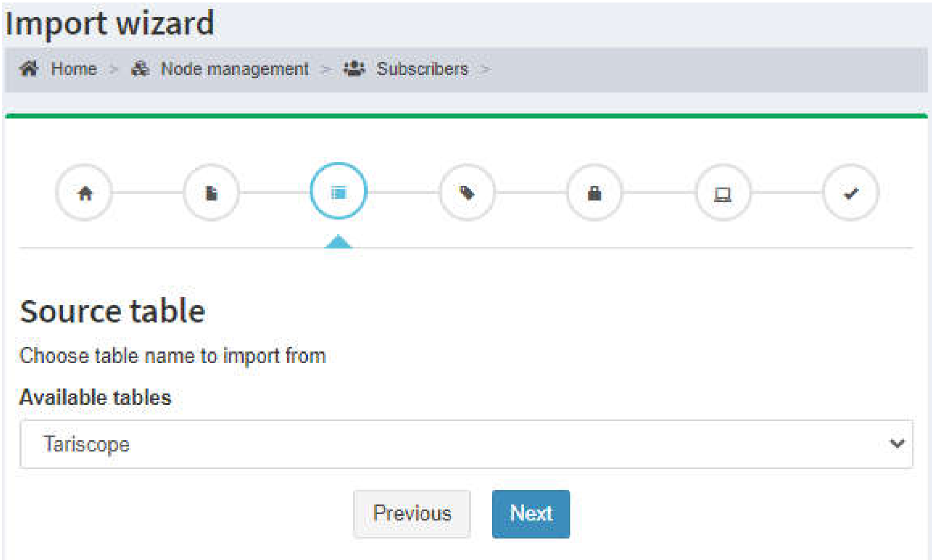


Figure 4.12.2.3

If on the previous step you have selected the Microsoft Excel file, the wizard page in Figure 4.12.2.3 displays a list of available tables of this file. Select the table that contains information about subscribers and click **Next**. The wizard window will be as shown in Figure 4.12.2.4.

The **Fields** page is divided on two parts. The top part contains lists of the Tariscope fields. In each list you should select the source field that correspond to the Tariscope field. The bottom part of the page displays the source file contents.

The wizard allows to import the following fields:

- **Name**. A subscriber's name.
- **Extension number (IP)**. An extension or IP address of subscriber.
- **Extension description**. An extension or IP address description.
- **Group**. A group name to which the subscriber belongs.
- **Extension number (IP) 2**. The second extension (telephone number) or IP address of the subscriber.
- **Extension number (IP) 3**. The third extension (telephone number) or IP address of the subscriber.
- **Subscriber type**. A sign that the subscriber (customer) is a legal entity or individual.
- **Auxiliary**. It is an auxiliary identifier that allows Tariscope to uniquely detect a subscriber. For CS1000 and Meridian 1 (Avaya - Nortel) this parameter can be used as a terminal number (TN).

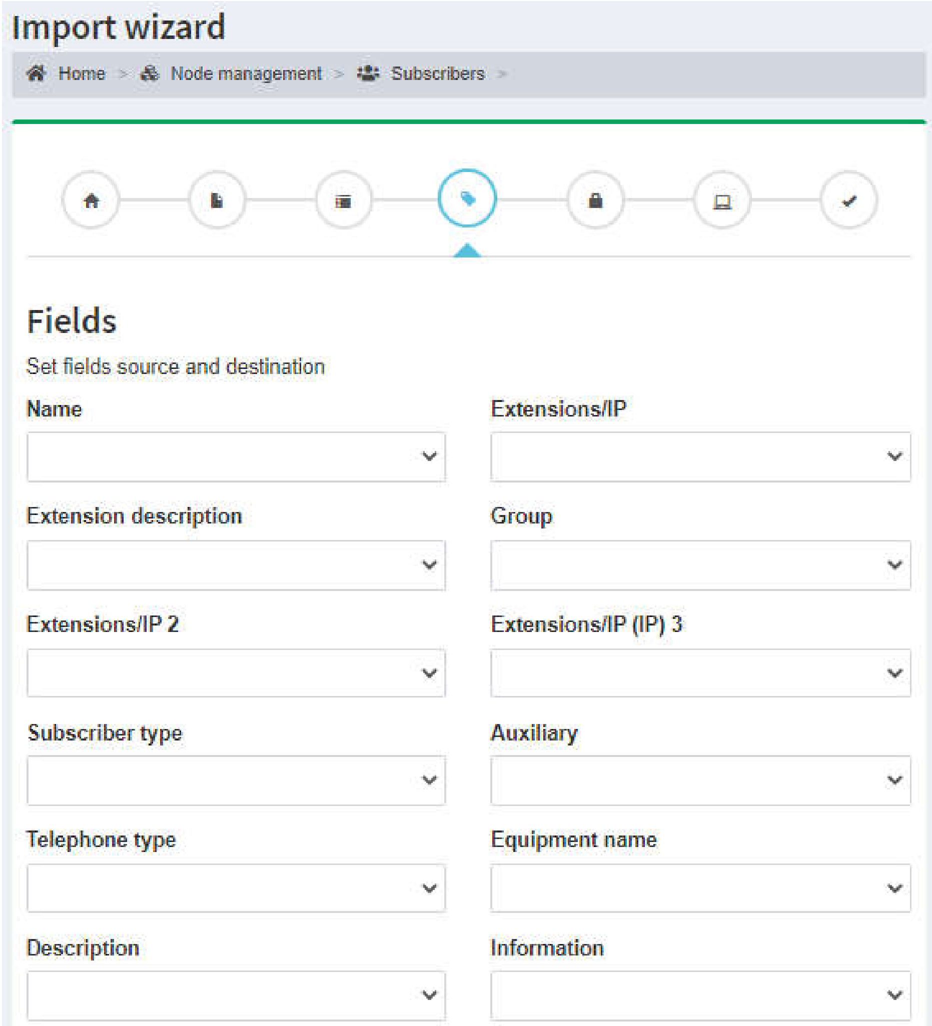


Figure 4.12.2.4

- **Telephone type**. This parameter is applied if the Tariscope is used with the restriction feature. In this case, for example, for CS1000 and Meridian 1 (Avaya - Nortel), Tariscope should send a command that contains the type of phone to set the restriction. The field is usually used for the Tariscope license with the restriction feature.
- **Equipment name**. It is the name of telecommunications equipment to which the extension (phone number) or IP address belongs.
- **Description**. Some additional information about the subscriber or his data that can be used, for example, when Tariscope creates reports.
- **Information**. The second field for additional information.
- **Company name**. It is a company name when the subscriber is a legal entity.
- **Firm code**.
- **Personal code**.
- **Tax code**.
- **Bank account**.
- **Bank code**.
- **Contract ID**. This is an identifier of contract with the subscriber. It is used in the Tariscope Provider edition.
- **Contract date**. The parameter is used in the Tariscope Provider edition.

- **Privileges code**. The privileges code of subscriber. The parameter is used in the Tariscope Provider edition.
- **Connection date**. It is the date from which the subscriber phone number or IP address is active.
- **Disconnection date**. It is the date from which subscriber's phone number or IP address is inactive.
- **City**.
- **Area**.
- **Street**.
- **House**.
- **Office/ Flat**.
- **Zip code**.
- **E-mail**. The email address that is used as login in the Tariscope Personal Area.
- **Auth code**. It is an authorization code that is used in the telephone system to identify a subscriber.
- **Initial balance**. This parameter is used only to the Tariscope Provider edition.
- **Rate plan**. It is a rate plan that subscriber uses.
- **Password**. It is used to the subscriber access to the Tariscope Personal Area.
- **Credit**. This value is used when the Tariscope license contains the restriction feature.
- **Account ID**. It is an identifier of subscriber’s account. It is used in Tariscope Provider.

The wizard tries to automatically identify by column names of an external file the appropriate field in the Tariscope database. If wizard does not find the correspondence but the required field is in the source file, select the field in the list manually.

Click **Next**. The wizard window will be as shown in Figure 4.12.2.5.

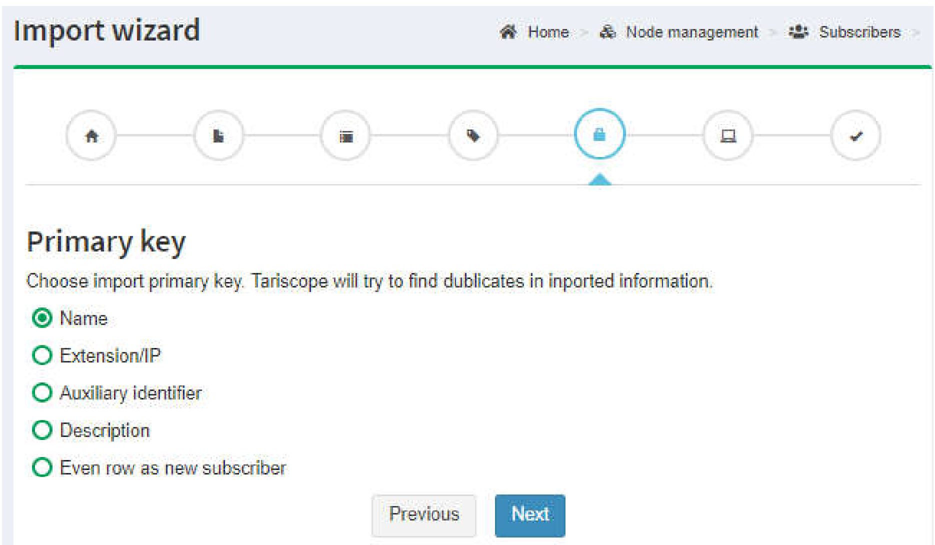


Figure 4.12.2.5

Select a parameter that will uniquely identify the subscriber. Click **Next**. The wizard window will be as shown in Figure 4.12.2.6.

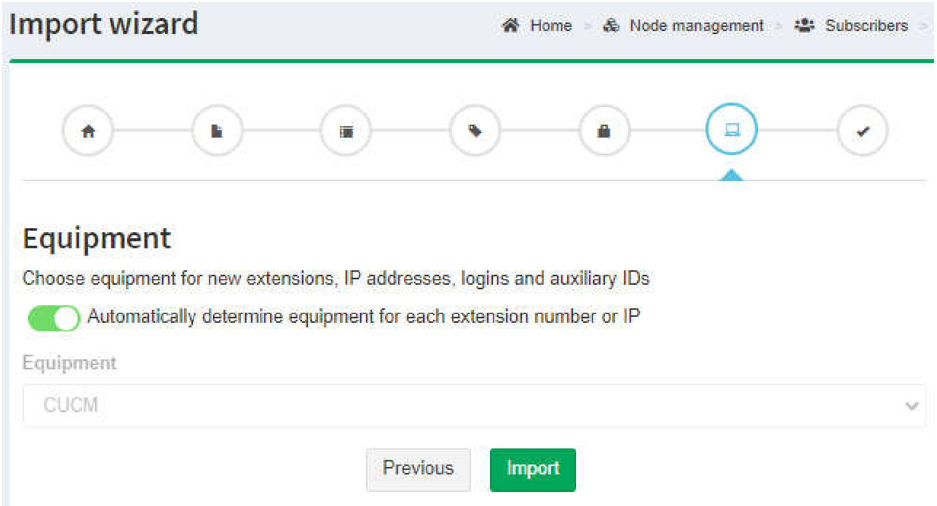


Figure 4.12.2.6

Select the telecommunications equipment (telephone system, router, etc.), where subscribers have extensions (phone numbers) or IP addresses. If the **Automatically determine equipment for each extension number or IP** switch is on, Tariscope will automatically select telecommunications equipment for each extension or IP address using the numbering plans of existing equipment in Tariscope. This method of determining the telecommunication equipment is recommended only in cases where there are multiple telecommunications equipment and for each of them there is numbering plan and these plans do not overlap. In other cases, we recommend turning on the switch, and select the desired telecommunications equipment by himself from the list. Click **Import** to continue.

When the import is finished, the **Import wizard** window displays the import results. An example of the window is shown in Figure 4.12.2.7.

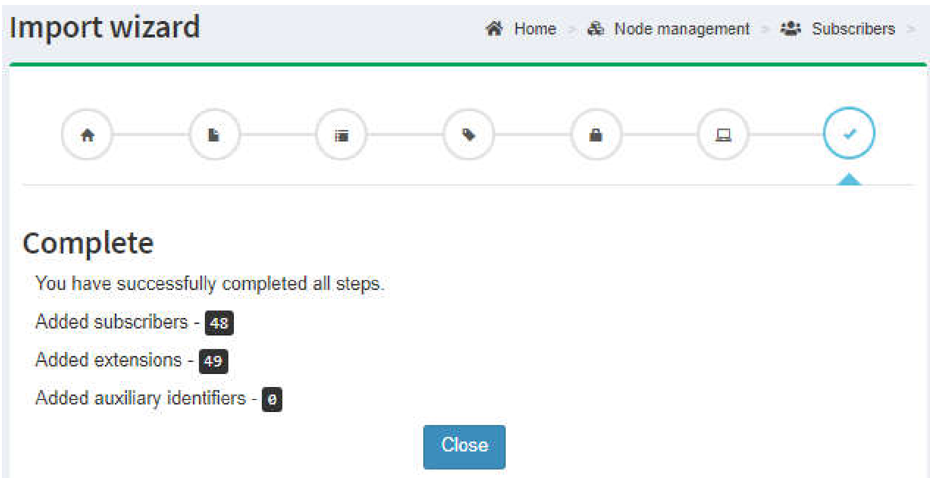


Figure 4.12.2.7

Click **Close**. The **Subscribers** page displays a table with the imported data.

4.12.3. Creation of subscriber data from CDR

Another option of the subscriber data creation is the conditional filling of some subscriber data based on detail call information (CDR, SMDR, AMA and others). In this case, the subscriber's name is specified as the conditional name corresponding to the subscriber phone number with the "a" prefix. For example, when Tariscope processes a call that was made from the "7777" extension number, the subscriber name will be created as 'a7777'. When the subscriber names are created like this way, the Numbering Plan is considered in Tariscope, Tariscope creates subscriber groups corresponding to the ranges of Numbering Plan. Conditional names of subscribers can later be replaced by the real names using the manual editing or importing data from an external file.

We recommend filling the subscriber data using this method only for quick and total estimation of call expenses to process previously saved log files with call information (CDR, SMDR, AMA and others). Because Tariscope does not rate the calls if subscriber data are absent in the database.

To use this method, you should have a telephone system in Tariscope. Select this telephone system in Tariscope menu. An example of the choice with the **CUCM** name is shown in Figure 4.12.3.1.

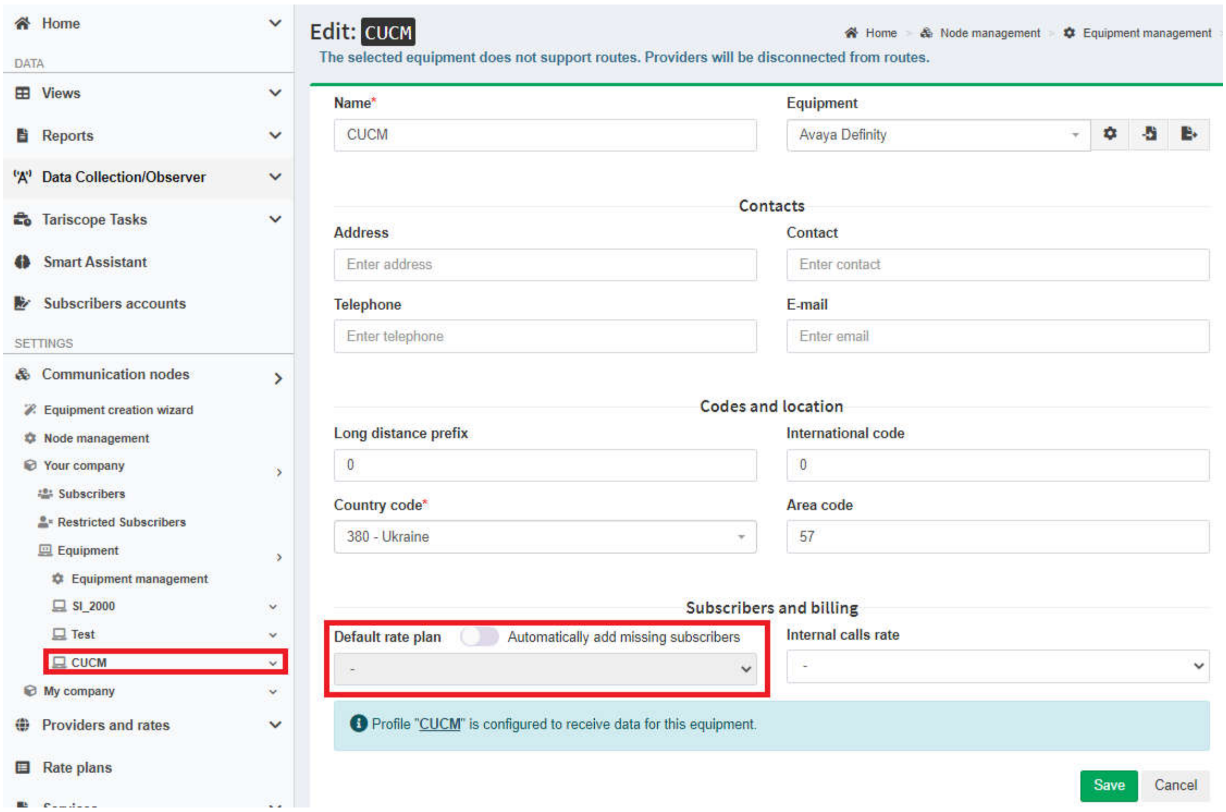


Figure 4.12.3.1

Turn on the **Automatically add missing subscribers** switch and select a rate plan for subscribers from the **Default rate plan** list. Click on the **Save** button.

Note. *If the required rate plan is absent, create it.*

In the Tariscope menu, select **Views → CDR processing**. The **CDR processing** page appears as shown in Figure 4.12.3.2.

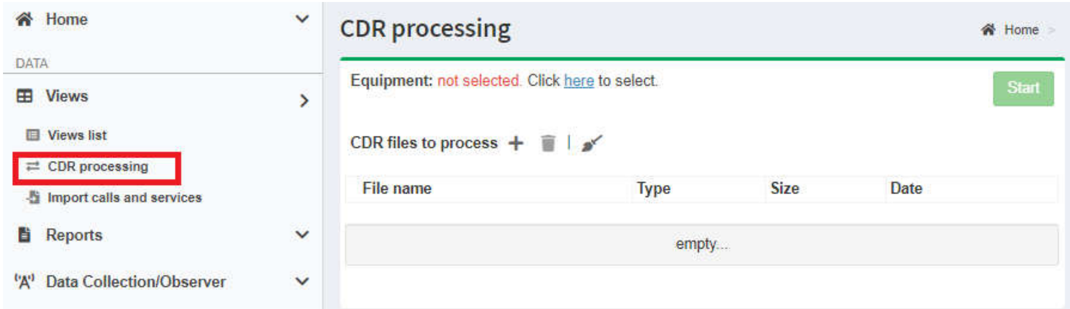


Figure 4.12.3.2

Click on the ‘**here**’ link. In the **Equipment selection** window, turn on the switch for the desired telephone system. Click **Select**. The telephone system name is displayed instead of the ‘not selected’.

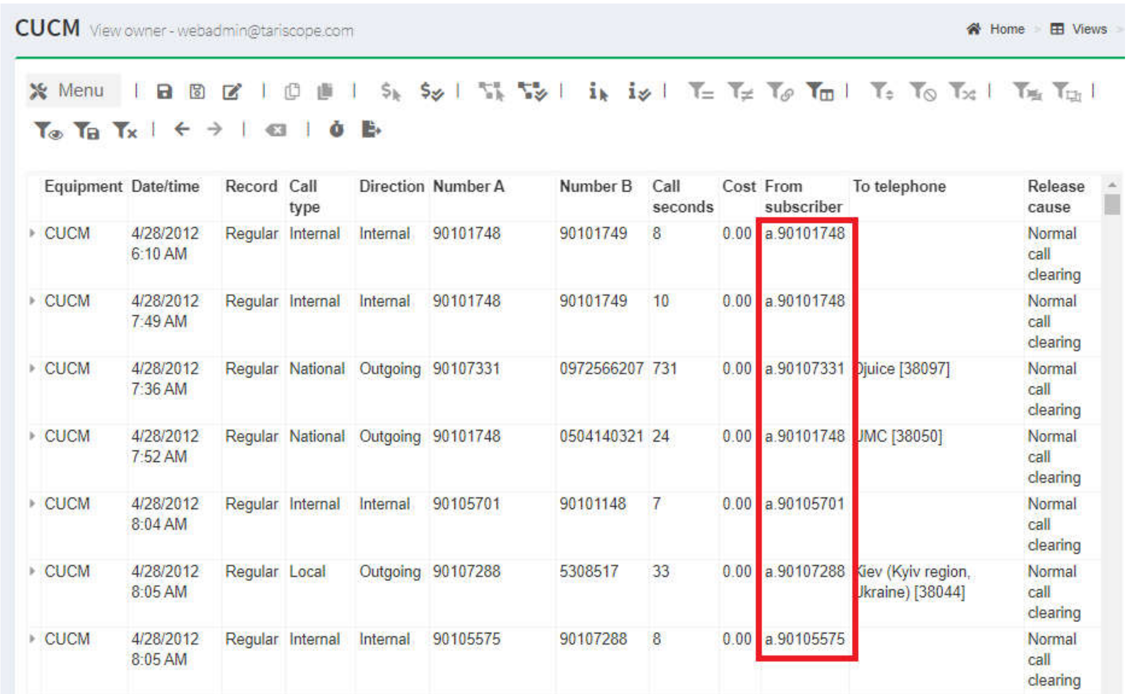
Click on the **Add** button on the toolbar and choose the CDR (SMDR, AMA or another) file or files, which contain the detail call information.

Click **Start**. Processing of call information begins.

Note. *For telephone systems, where a CDR file does not contain information about year, Tariscope requests to type the year of calls before processing CDR.*

Note. *This is assumed that all the parameters for telephone system should be configured to beginning of processing.*

At the end of processing you can check on its results opening or creating the view for this telephone system. An example of the calls view is shown in Figure 4.12.3.3.



Equipment	Date/time	Record	Call type	Direction	Number A	Number B	Call seconds	Cost	From subscriber	To telephone	Release cause
CUCM	4/28/2012 6:10 AM	Regular	Internal	Internal	90101748	90101749	8	0.00	a.90101748		Normal call clearing
CUCM	4/28/2012 7:49 AM	Regular	Internal	Internal	90101748	90101749	10	0.00	a.90101748		Normal call clearing
CUCM	4/28/2012 7:36 AM	Regular	National	Outgoing	90107331	0972566207	731	0.00	a.90107331	Djuice [38097]	Normal call clearing
CUCM	4/28/2012 7:52 AM	Regular	National	Outgoing	90101748	0504140321	24	0.00	a.90101748	UMC [38050]	Normal call clearing
CUCM	4/28/2012 8:04 AM	Regular	Internal	Internal	90105701	90101148	7	0.00	a.90105701		Normal call clearing
CUCM	4/28/2012 8:05 AM	Regular	Local	Outgoing	90107288	5308517	33	0.00	a.90107288	Kiev (Kyiv region, Ukraine) [38044]	Normal call clearing
CUCM	4/28/2012 8:05 AM	Regular	Internal	Internal	90105575	90107288	8	0.00	a.90105575		Normal call clearing

Figure 4.12.3.3

As you see, the **From subscriber** column contains the subscriber names like ‘a.DN’.

If you move to the **Subscribers** page, you see that subscribers, which calls were processed, were created. Now you can edit the subscriber data.

4.12.4. Manual input and editing of subscriber data

We recommend starting a manual input of subscriber data with a creation of structure of the subscriber database, which reflects the customer structure (for Tariscope Provider) or your company structure (for Tariscope Enterprise).

A customer structure can be divided on areas, streets, or other groups of customers, which are easy-to-use for administration and generation of reports on groups. If you do not need to divide subscribers on groups, skip this configuration step.

To display the hierarchical structure of the subscriber database, on the toolbar of the **Subscribers** page, click on the **How to show** icon. In the appeared window there is the **Table settings** list. It contains three items:

- **Tree (subscribers)**. This choice displays subscribers in a tree view.
- **Table (subscribers)**. This option displays subscribers in a table. A subscriber group name can be displayed as a table column.
- **Table (extensions)**. This option displays all subscriber extensions in a table. A subscriber group name can be displayed as a table column.

Select the **Tree (subscribers)** item. An example of the **Subscribers** page is shown in Figure 4.12.4.1.

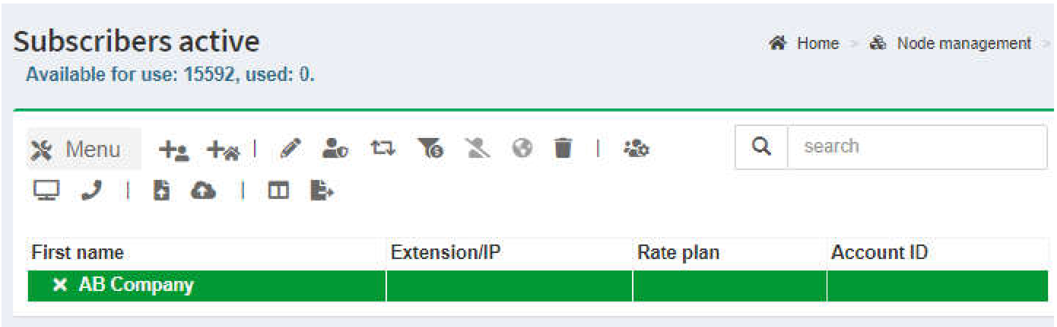


Figure 4.12.4.1

In Figure 4.12.4.1, **AB Company** is a telecommunications node name. By default, it is assigned to the root subscriber group.

To create a new subscriber group, select a group that will be included the new group. In our example, you should select the **AB Company** row in the table and click on the **New group** icon on the toolbar. The **New group** window appears. Enter a group name in the **Name** box and click **Save**. In the **Subscribers** page, the new row appears.

Repeat these actions to create all required groups.

You can change a group name. To do this, select the desired row and click on the **Edit** icon on the toolbar. The **Edit group** window appears, where you can change the group name and enter a group description and address in the corresponded boxes. To keep changes, click **Save**.

To create a subscriber which belongs to a group, select the row of the group, and click on the **New subscriber** icon on the toolbar. The **New subscriber** window appears. Enter a subscriber name in the **Name** box and click **Save**. The **Edit** [Subscriber] page appears. An example of the page is shown in Figure 4.12.4.2.

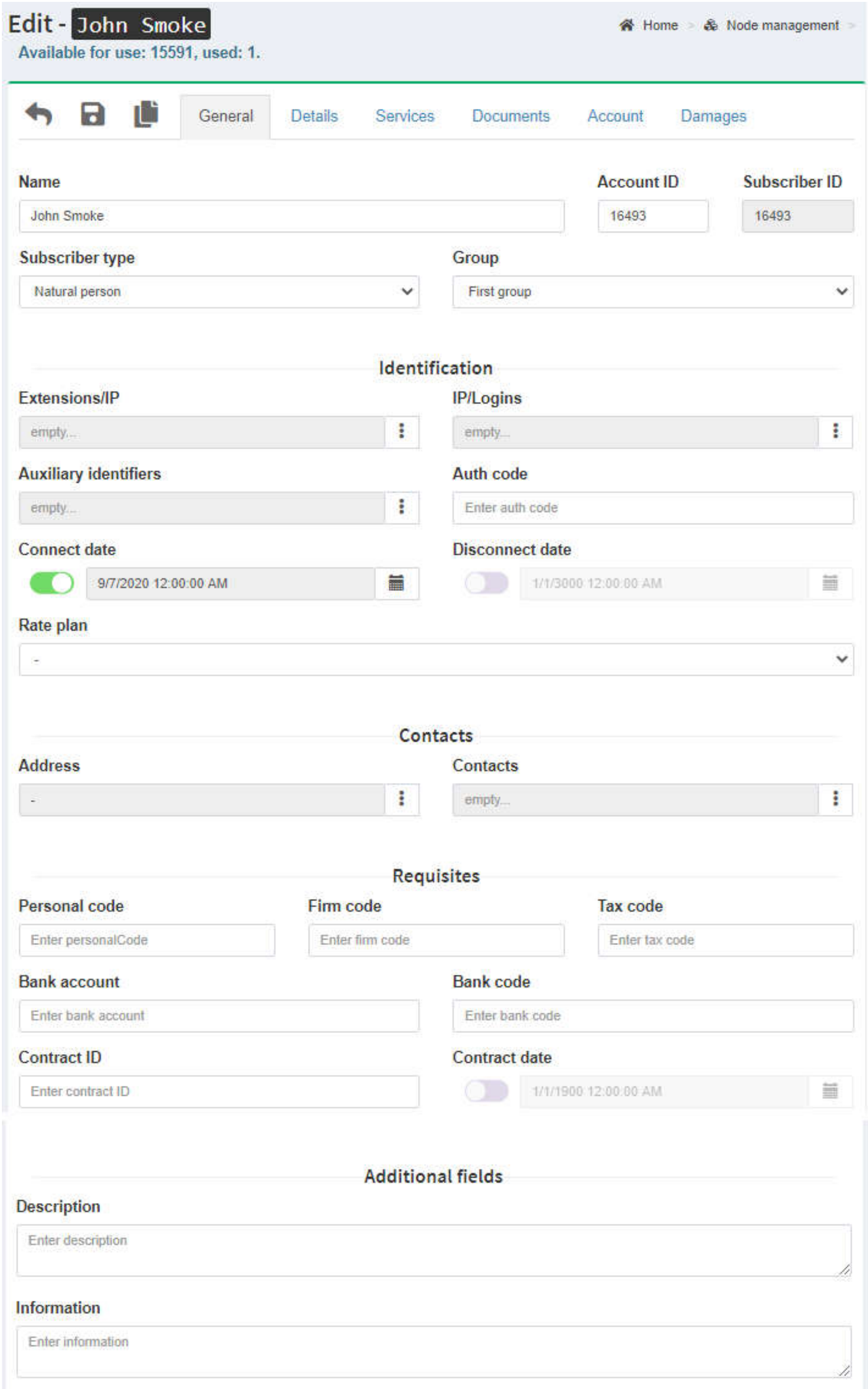


Figure 4.12.4.2

The page contains the following tabs:

- **General**.
- **Details**.
- **Services**.
- **Documents**.
- **Account**.
- **Damages**.

Figure 4.12.4.2 displays the **General** tab.

The **Name** box displays the subscriber name. You can change the name.

Subscriber ID is an identifier that Tariscope automatically assigns to a subscriber. You cannot change it.

Account ID is an account number. It is applied in the Tariscope Provider edition. The Tariscope Enterprise users can skip this choice. By default, **Account ID** is equal to **Subscriber ID**. You can change it.

The **Subscriber type** list allows to set one from following subscriber types:

- **Natural person**. Select this item for customers who are individuals.
- **Juridical person**. Select this item if the customer is a legal entity.
- **Service**. Recommends selecting the item for employees of your company. If you use the Tariscope Enterprise edition that interacts with hospitality system, you can set this subscriber type to employees of the hotel. In this case the call information of such subscribers will not be sent to the hotel system.
- **Budgetary**. Select the item if the customer is a budget institution.
- **Preferential**. Select the item if the customer has some privileges.

Select the required subscriber type.

The **Group** list displays the group name, which you selected before creating the subscriber. You can change the group.

To set a list of extensions (telephone numbers) that belong to the subscriber, click on the "…" button that is located on the right from the **Extensions/IP** box (Figure 4.12.4.2). The page appears an example of which is shown in Figure 4.12.4.3.

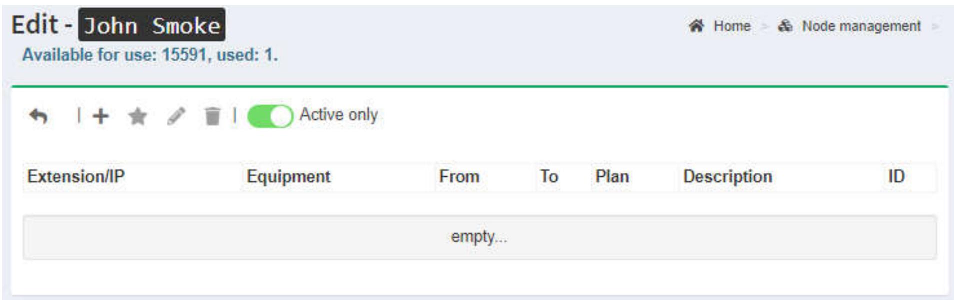


Figure 4.12.4.3

To add a new extension, click on the **Add** icon on the toolbar. The **New extension** window appears (Figure 4.12.4.4).

In the **Equipment** list, select the telephone system to which the extension belongs.

If the numbering plan was created for the telephone system earlier, you can select a range of extensions which contains the required extension. To select, use the **Range** list.

In the **Extension/IP** box, type the required extension. You can set a list of extensions. Enter them separated by semicolons. For example: 100;103;109. If you want to set a range of extensions, enter the range like this: 100 – 106.

In the **Rate** list, select the rate plan that will be applied to the extension.

*__Note__. If the rate plan for the extension is applied the same as the plan for the subscriber, the input of this parameter is not necessary. In the case, you should specify the rate plan in the **Subscriber** page.*

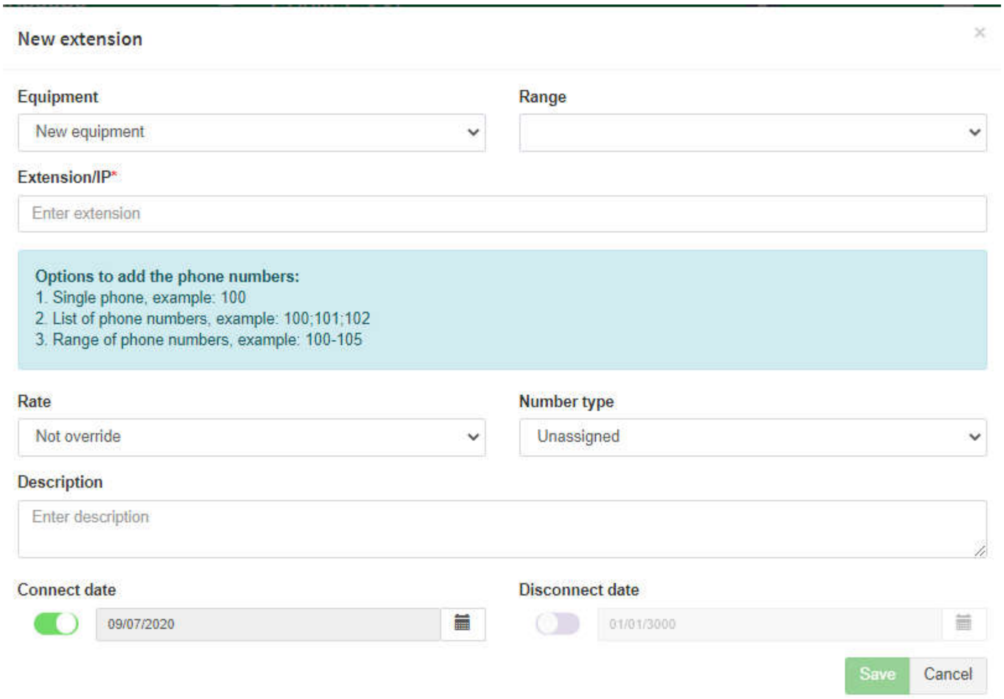


Figure 4.12.4.4

If you need to set an extension type, select it in the **Number type** list. There are the following options:

- Unassigned.
- DID.
- Toll-free.

If you wish to make a description for this extension, type it in the **Description** box.

If you want that this extension be set from the specific date, turn on the **Connection date** calendar box and select the date from it.

Note. *If the extension will be applied from the same date when the subscriber is valid, the input of this parameter is not necessary. For this case, the date should be specified in the* ***Connection date*** *calendar list of the* ***Subscriber*** *page (Figure 4.12.4.2).*

If you want that the extension is applied to the specific date, turn on the **Disconnection date** calendar box and select the date from it.

Note. *If the extension will be applied to the same date when the subscriber was disconnected, the input of this parameter is not necessary. For this case, the date should be specified in the* ***Disconnection date*** *calendar list of the* ***Subscriber*** *page (Figure 4.12.4.2).*

To keep settings, click **Save**. A new row appears in the table (Figure 4.12.4.3).

To add a new extension, repeat the actions.

By default, the first added extension is regarded as the primary extension. The row of the primary extension is displayed in bold in the extension table. Only primary extension is displayed in the subscriber table if you selected the **Table (subscribers)** option to display this table.

If you have some extensions and you want to change the primary extension, select the row in the table (Figure 4.12.4.3) and click on the **Set as primary** icon in the toolbar.

If you need to change an extension setting, select the row and click on the **Edit** icon on the toolbar.

To delete an extension, select the row and click on the **Delete** icon.

By default, the extension page displays only active extensions that is, those that do not have a disconnection date. To display all extensions, turn off the **Active only** switch.

Back to the subscriber table by clicking on the **Back to subscriber** icon on the toolbar.

If you need to add IP addresses to the subscriber, click on the '…' button located right on the **IP/Logins** box. The extensions and IP addresses page appears an example of which is shown in Figure 4.12.4.3. To add a new IP address, execute the same actions that were described above for extensions.

Auxiliary identifiers. The auxiliary identifiers allow Tariscope to uniquely identify a subscriber in the case, when he has an extension used by multiple subscribers. This situation is valid to several PBXs, for example, CS1000 and Meridian 1 (Avaya - Nortel). For these PBXs, the terminal numbers (TN) are used as such identifiers.

Auth code. This is a code that is used to authorize a subscriber during call is made. If the subscriber uses an authorization code to make calls, enter the code in the **Auth code** box.

Connection date. A date in this calendar box defines the date from which the charging for the subscriber is begun. If you specified such dates for every extension (or IP addresses) and service, the selection of the date in the box is not necessary. If the charging for all subscriber's extensions, IP addresses, and services are begun from the same date, we recommend setting the date only in this box. If the date was not set for the subscriber and it was not set for extensions, IP addresses, and services, the calls and services for any date will be charged to this subscriber.

Disconnection date. A date in this calendar box defines a final date to which the charging for the subscriber is performed. The dates of turn off an extension (IP address or service) belonging to the subscriber are alternative dates to this one.

Rate plan. This list defines the rate plan which is applied to the subscriber. The rate plan can be specified on every extension, IP address, and service. The individual settings are recommended only when different communication services are charged using different rate plans. If a rate plan was not specified in the box and it was not specified for a particular service, call rating and charging services are not performed. Select a rate plan from the list. If the required plan is absent, create it.

Contact information is in the **Address** and **Contacts** boxes.

To add the subscriber address, click on the '…' button located on the right from the **Address** box. The **Address** window appears as shown in Figure 4.12.4.5.

Type the address parameters in the boxes and click **OK**.

To add the subscriber contacts, click on the '…' button located on the right from the **Contacts** box. The contacts page appears. An example is shown in Figure 4.12.4.6.

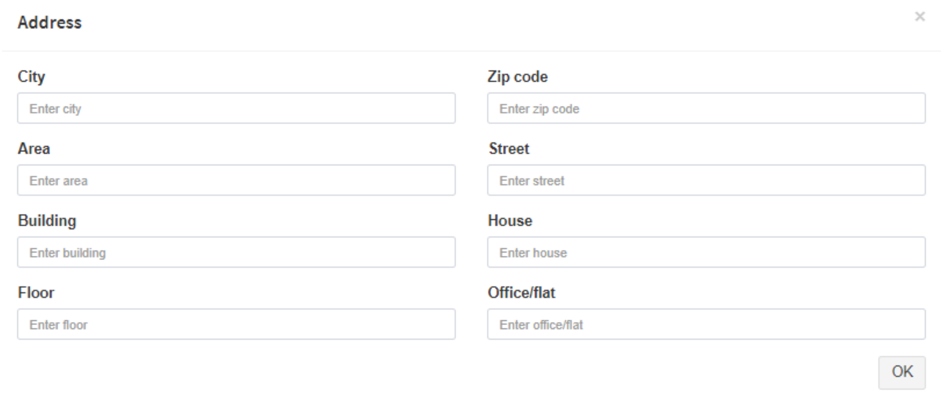


Figure 4.12.4.5

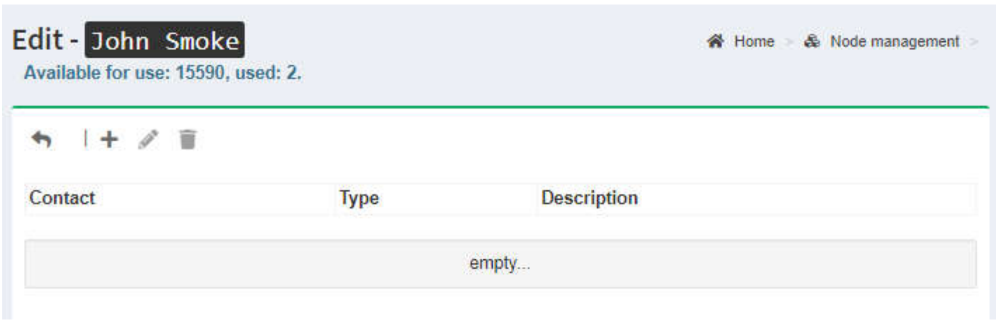


Figure 4.12.4.6

Click on the **Add** icon on the toolbar. The **New contact** window appears as shown in Figure 4.12.4.7.

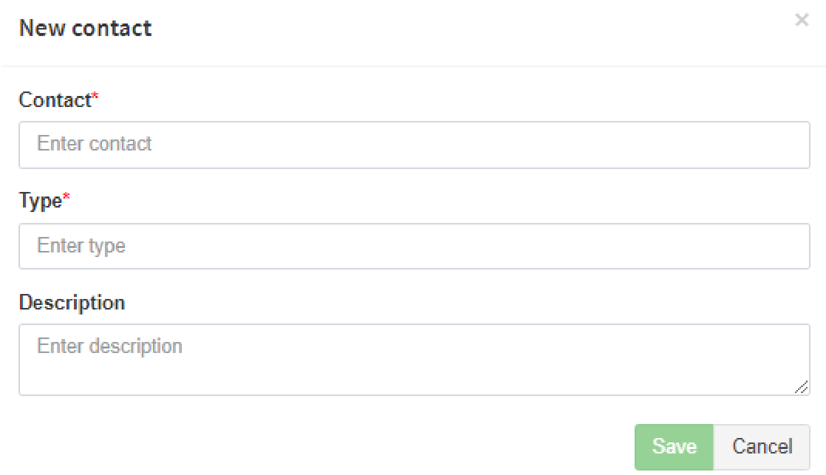


Figure 4.12.4.7

In the **Type** list, select an option that matches the contact or enter your own contact type. By default, there are the following options:

- Landline phone.
- Mobile phone.
- IM.
- Skype.
- Email.

In the **Requisites** section, you can enter the following parameters.

Personal code. The code is a national identification number that is used by the governments of many countries as a means of tracking their citizens, permanent residents, and temporary residents.

Firm code. The code is an identification number of companies. In various countries, these codes may have a different name.

Tax code. Specifies a tax code of the customer (subscriber).

Bank account. Specifies a bank account of the customer (subscriber).

Bank code. A code of the bank where is the subscriber bank account.

Contract ID. An identifier of the agreement according to which the provision of telecommunications services is carried out.

Contract date. To specify the contract date, turn on the switch and choose the date in the calendar box.

Description. The additional information field that you can use for their own purposes.

Information. The additional information field that you can use for their own purposes.

If you are not supposed to enter any additional parameters in the **Details**, **Services**, **Documents**, **Account**, and **Damages** tabs for the subscriber, click on the **Save** button on the toolbar. Otherwise, move to the desired tab to continue the subscriber configuration.

Details on the subscriber

To enter additional settings for a subscriber, such as the restriction settings, the second address, the type of mail delivery, and so on, select the **Details** tab on the Subscriber page (Figure 4.12.4.2). This page will be as shown in Figure 4.12.4.8.

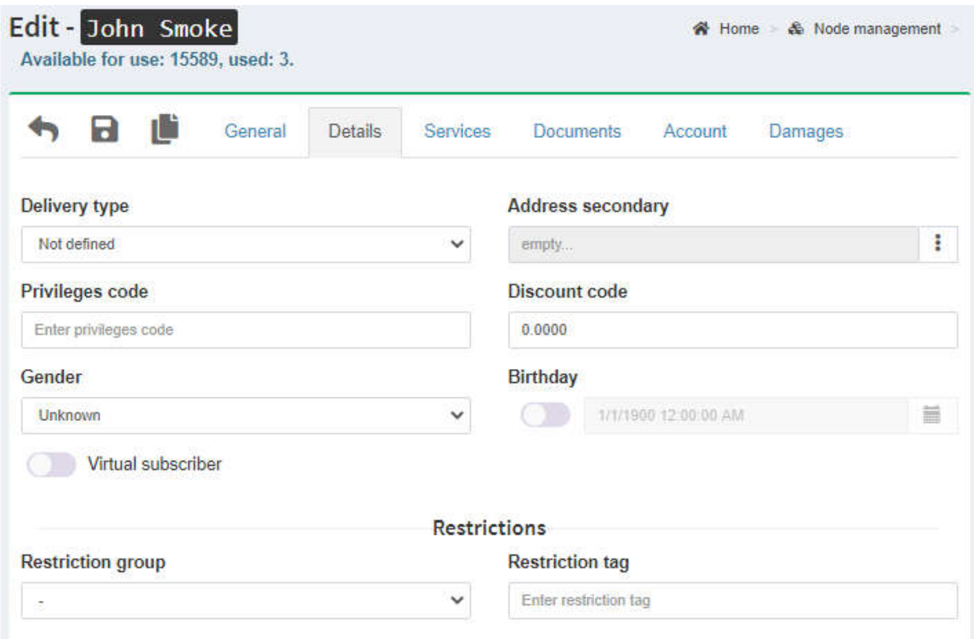


Figure 4.12.4.8

If you use the Tariscope Enterprise edition with the restriction feature, this window can be used to enter the restriction parameters. The other parameters of the window are actual only for the Tariscope Provider edition.

In the **Delivery type** list, select the required type. There are the following options:

- **Not defined**.
- **By mail**.
- **Courier**.
- **Self pickup**.
- **Email**.

If customer (subscriber) uses two addresses, you can enter a second address in the **Secondary address** box. To do this, click on the "…" button located on the right of the **Secondary address** box. The **Address** box appears (Figure 4.12.4.5). Type the second address and click **OK**.

If the subscriber has privileges for telecommunications services, then:

- in the **Privileges code** list, type or select a suitable code that is assigned to this category of privilege. This field is informational and can be used in reports.
- in the **Discount code** list, type or select a factor to be applied to a rate plan of subscriber. This is an informational field and is not used in calculations of cost of telecommunications services. It can be used in reports.

If you want, you can select a subscriber gender in the **Gender** list.

To specify a subscriber birthday, turn on the **Birthday** switch and select the date in the calendar box.

One of the addition features in Tariscope is a virtual subscriber. This feature is recommended to use if you need to charge call costs to the transit routes, gateways, or channels. If the editable subscriber is a virtual one, turn on the **Virtual subscriber** switch.

In case Tariscope comprises the restriction feature you can set restrictions for the current subscriber. Before to set restrictions for the subscriber you must configure the restriction feature for a specific telephone system.

In the **Restriction group** list, select the desired group.

In the **Restriction tag** box, enter a code that will be used in the script to change the subscriber restriction in the telephone system.

Other settings of the restriction feature is executed on the **Subscribers** page. Select the desired subscriber on the page and click on the **Restrictions** icon on the toolbar. The restrictions page appears as it is shown in Figure 4.12.4.9.

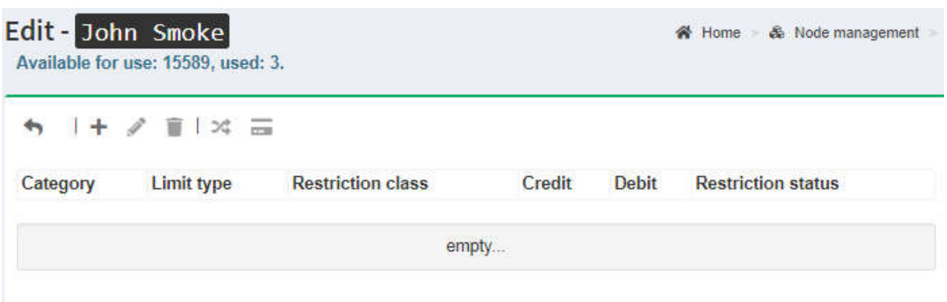


Figure 4.12.4.9

Click on the **Add** icon on the toolbar. The **New restriction** window appears as shown in Figure 4.12.4.10.

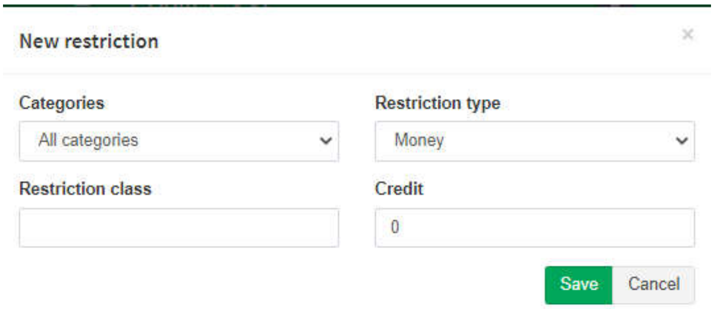


Figure 4.12.4.10

In the **Category** list, select a category to which the restriction will be applied. This list contains all categories which were created in Tariscope regardless of the purpose of their use.

In the **Restriction type** list, select the desired type. There are two types:

- **Money**. The restriction on the calls are assigned in money.
- **Seconds**. The restriction on the calls are assigned in seconds.

The **Restriction class** box does not used in most cases. Skip it.

In the **Credit** box, type a credit value. When the value is achieved, Tariscope will applies the restriction.

Click **Save**.

Subscriber services

Service settings are relevant only for the Tariscope Provider edition. To set the parameters of services installed for the subscriber, select the **Services** tab on the **Subscriber** page (Figure 4.12.4.2). This page will be as shown in Figure 4.12.4.11.

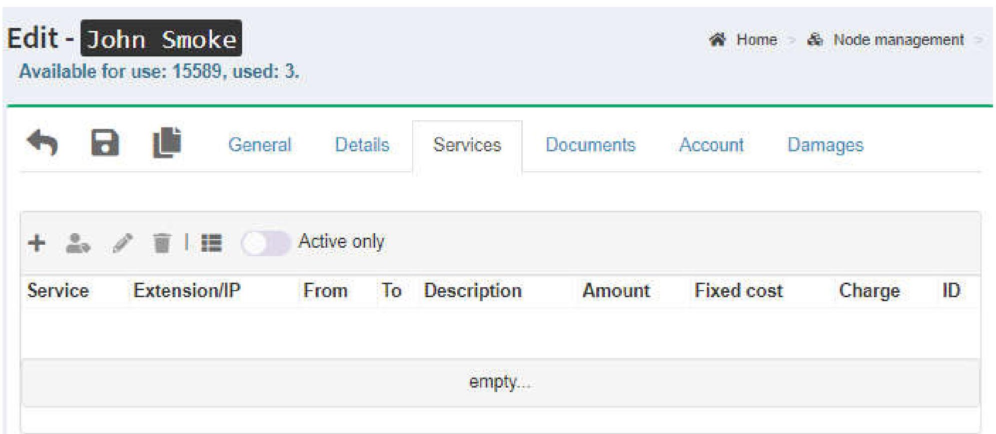


Figure 4.12.4.11

This configuration page assumes that the list of services was previously created. To add a new service, click on the **Add** icon. As a result, the **Services** window appears as shown in Figure 4.12.4.12.

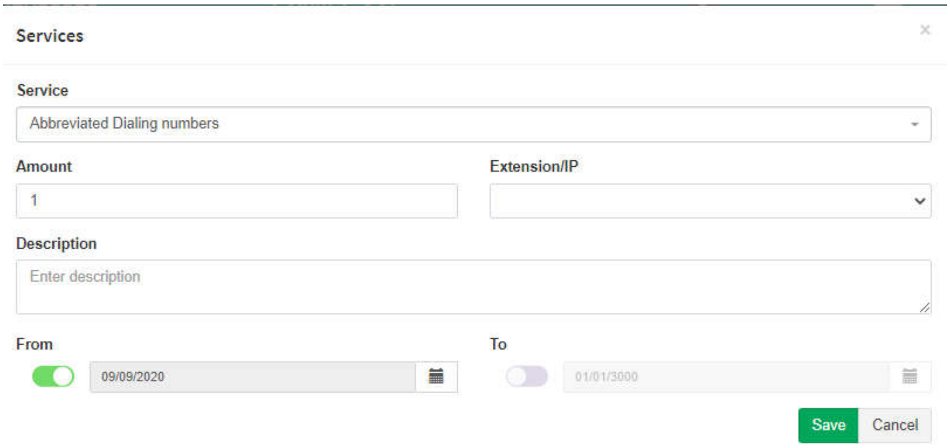


Figure 4.12.4.12

In the **Service** list, select the desired service.

In the **Amount** box, set the number of such a service type of the service that will be charged to the subscriber.

If the service is tied to a particular phone number (extension) or IP address, in the **Extension/IP** list, select the required extension or IP address.

If any comments are necessary to this service, you can enter them in the **Description** box.

If you want the service is applied from the specific date, turn on the **From** switch and select the date in the calendar box.

To stop charging the service, turn on the **To** switch and select the desired date.

Click **Save**. To set other services, repeat these steps.

On the page (Figure 4.12.4.11), a list of the entered services will be displayed.

To change a service, select it on the services page and click on the **Edit** icon on the toolbar. Do the changes in the **Services** window (Figure 4.12.4.12).

To delete a service, select it on the services page and click on the **Delete** icon on the toolbar.

If you have bundles of services and you want to set a bundle to the subscriber, click on the **Bundles** icon on the toolbar (Figure 4.12.4.12). The **Bundles** window appears as shown in Figure 4.12.4.13.

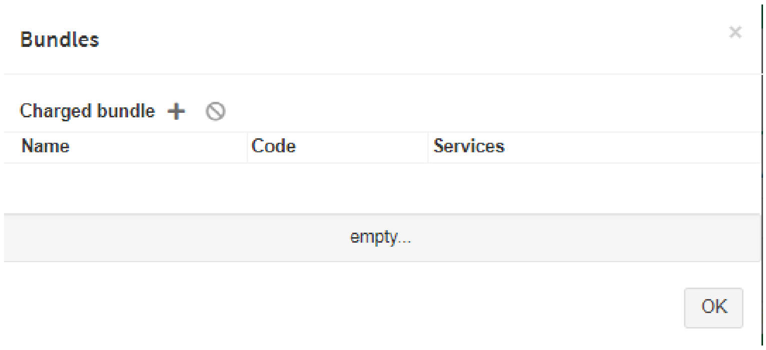


Figure 4.12.4.13

In the window, click on the **Add** icon on the toolbar. The **Select a bundle** window appears. An example of the window is shown in Figure 4.12.4.14.

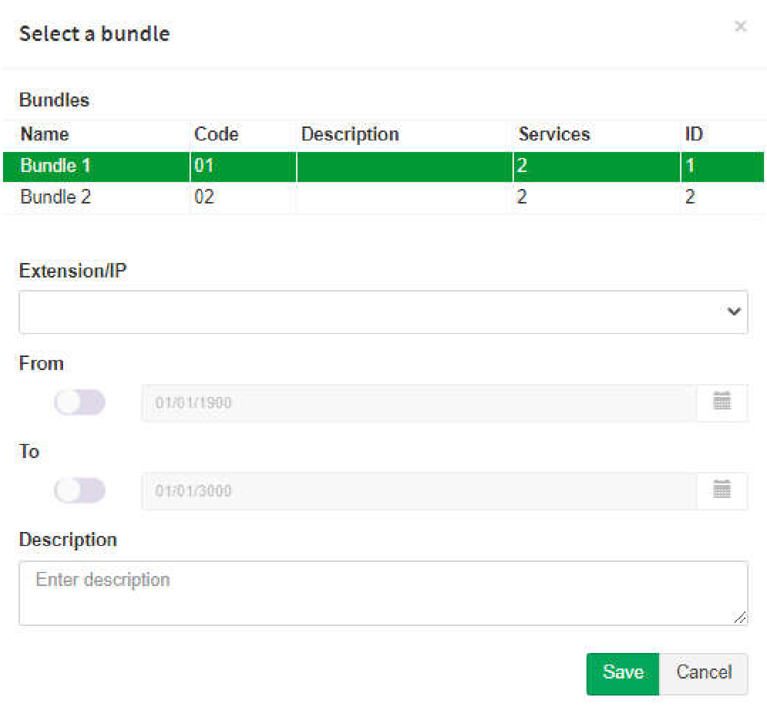


Figure 4.12.4.14

In the **Bundles** table, select a bundle.

If the bundle should bind with an extension or IP address, select it in the **Extension/IP** list.

If you want the bundle is applied from the specific date, turn on the **From** switch and select the date in the calendar box.

To stop charging the bundle, turn on the **To** switch and select the desired date from the calendar box.

You can add a description to the bundle in the **Description** box.

<u>Note</u>*. Services may include in a rate plan. In this case, individual assignation of these services to each subscriber is not required. Enough to assign a rate plan for a subscriber.*

The administrator has the ability to set an individual cost of the service. To do this, select the row in the service table (Figure 4.12.4.11) and click on the **Set personal cost** icon on the toolbar. The **Personal cost** window appears as shown in Figure 4.12.4.15.

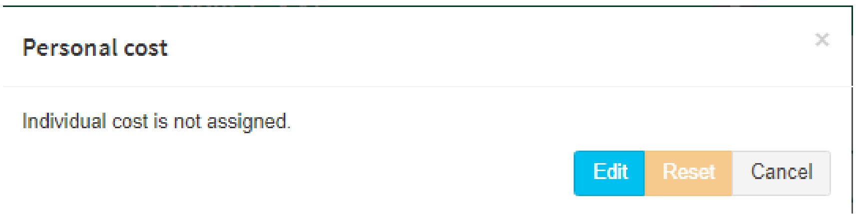


Figure 4.12.4.15

Click **Edit**. The **history of the individual cost of service** window appears. An example of the window is shown in Figure 4.12.4.16.

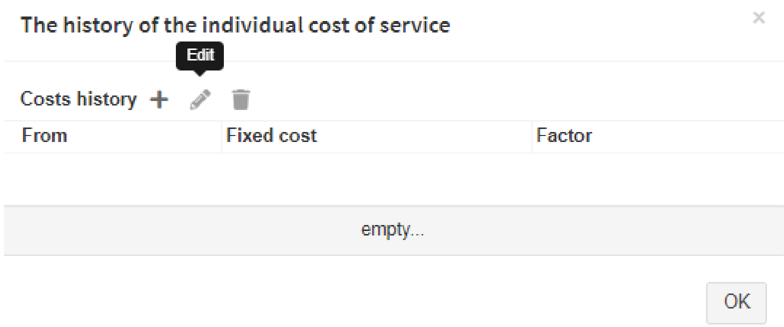


Figure 4.12.4.16

Click on the **Add** icon on the toolbar. The **New personal cost** window appears as shown in Figure 4.12.4.17.

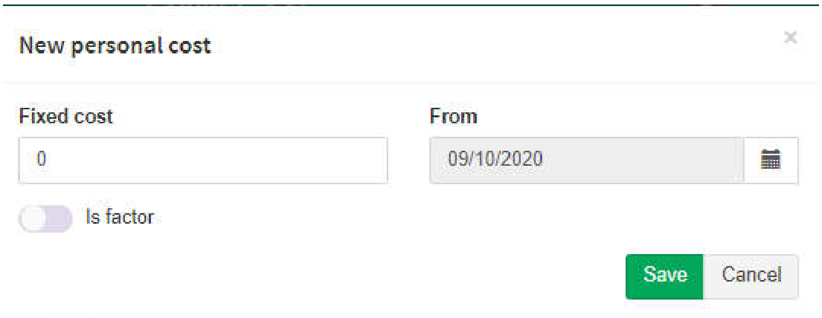


Figure 4.12.4.17

You can set a new cost for a service in two ways, using a new fixed cost or a factor to the basic cost of the service. To set a fixed cost, enter it in the **Fixed cost** box. To use a factor, turn on the **Is factor** switch. The **Fixed cost** label is changed to the **Factor** label. Enter the factor in the box.

In the **From** calendar box, select the date from the new service cost will be applied.

Click **Save**.

To change the personal service cost, in the window (Figure 4.12.4.16), select the row of the service and click on the **Edit** icon on the toolbar. Change the service cost and keep the change.

To delete the personal service cost, in the window (Figure 4.12.4.16), select the row of the service and click on the **Delete** icon on the toolbar.

Subscriber documents

To enter, view or edit documents that are associated with a specific subscriber, select the **Documents** tab on the **Subscriber** page (Figure 4.12.4.2). The **Subscriber** page will be as shown in Figure 4.12.4.18.

This tab allows you to enter, view, edit all documents that relate to a specific subscriber, which greatly simplifies the process of subscriber management.

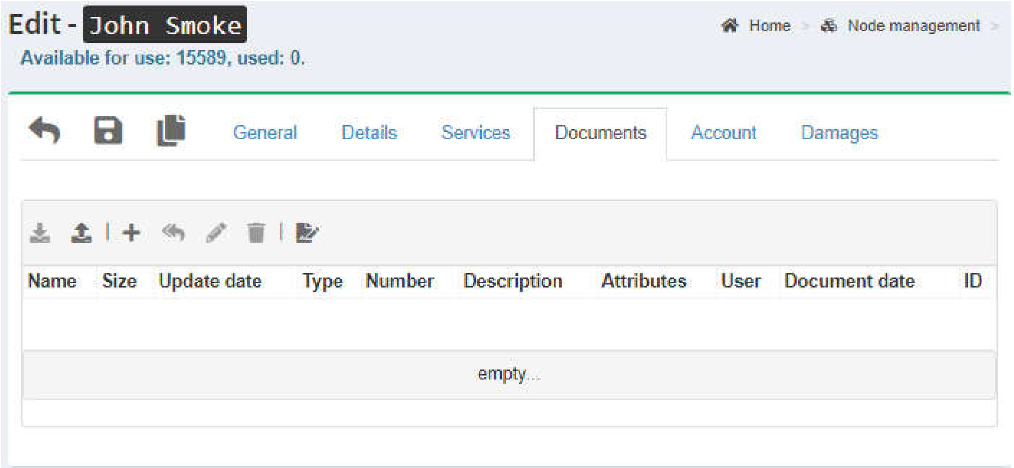


Figure 4.12.4.18

Before adding documents, we recommend creating an initial list of possible types of documents that can be used in Tariscope. For example: agreements, contracts, invoices, receipts, reports, etc. To do this, on the toolbar of the window (Figure 4.12.4.18), click on the **Edit file types** icon. The **Document types** window appears as shown in Figure 4.12.4.19.

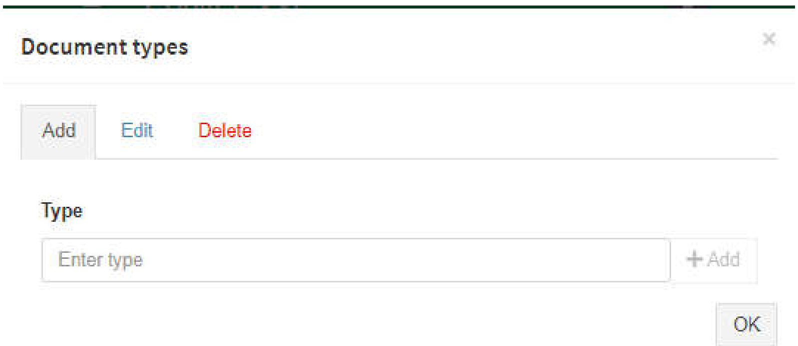


Figure 4.12.4.19

The window has three tabs: **Add**, **Edit**, **Delete**. By default, the **Add** tab is opened. To add a new document type, enter its name in the **Type** box and click on the **Add** button.

Repeat this step to add other types of documents.

To edit a document type, choose the **Edit** tab and select the desired line in the **Select type** list. Click on the **Rename** button. The **Type** box appears where you should do the changes and click **Save**.

To delete a document type, select the **Delete** tab. In the **Select type** list, select the desired type, and click on the **Delete** button.

To add a new document to the subscriber, click on the **Add** icon on the Documents page (Figure 4.12.4.18). The **Upload** window appears as shown in Figure 4.12.4.20.

Click on the **Choose** button to select the document.

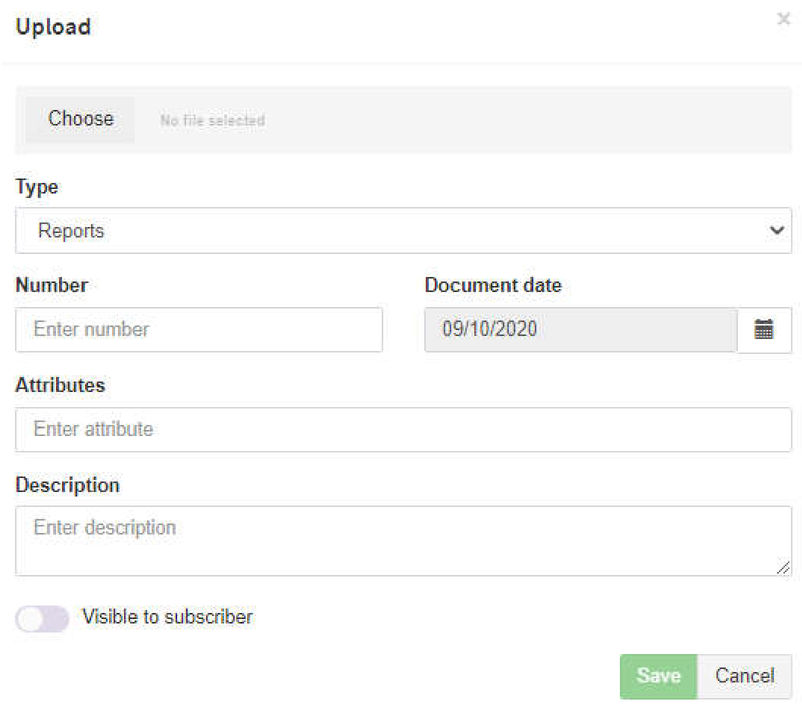


Figure 4.12.4.20

In the **Type** list, select the document type.

In the **Number** box, type the document number.

In the **Document date** box, select the document date.

In the **Attributes** box you may set additional parameters of the document.

In the **Description** box, if necessary, you can enter a short description of the document. It can be used to quickly find the document.

To provide access of subscriber to this document in the Tariscope Personal Area, turn on the **Visible to subscriber** switch.

Click **Save**.

A new row with parameters of the added document is displayed in the document table.

To quickly add a file without entering its parameters, you can use the **Upload** icon on the toolbar (Figure 4.12.4.18). Click on this icon to open the **Open** window and select the desired file. After uploading the file, a new row is added in the document table. In the future, you can change the document data.

To change the document parameters, select the row with the document and click on the **Edit** icon on the toolbar. The **Upload** window appears as shown in Figure 4.12.4.20, where you can execute the changes.

If you need to replace the document file in the database, select the row with the document and click on the **Replace file in DB** icon on the toolbar. Select the desired file.

To download the document file, select the row with the document and click on the **Download** icon on the toolbar. In the **Save as** window, select the desired folder, and save the file.

To delete a document, select the row with the document and click on the **Delete** icon on the toolbar.

Account

In the Tariscope Provider edition the Tariscope program has a specific page for working with the subscribers' accounts, **Subscribers accounts**. At the same time, the Subscriber page also provides information about the status of the subscriber's account.

To view the subscriber's account on the Subscriber page, select the **Account** tab. An example of the Account tab is shown in Figure 4.12.4.21.

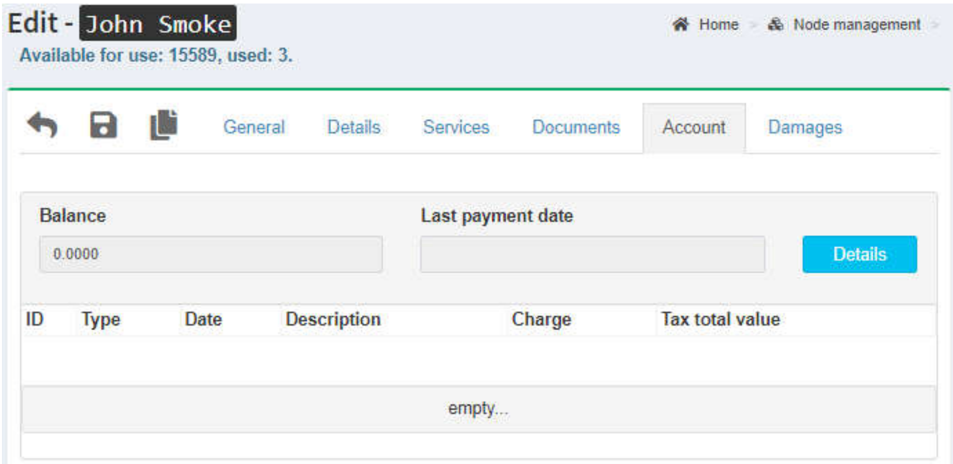


Figure 4.12.4.21

The **Balance** box displays a balance of the subscriber account.

The **Last payment date** box displays the last date when the subscriber paid for the telecommunications services.

The table on the tab displays data of the charged services and the received payments.

To look at the detailed information on the account or execute some actions with account, click on the **Details** button. Tariscope displays the subscriber’s account from the **Subscribers accounts** page.

Damages

Tariscope allows you to keep information about damages of telephone equipment or data transmission equipment. Information about damages can be used to account for them in the charges of the services. The setting of this is performed on the **Services** configuration page.

To enter data on damages, select **Damage** tab. As a result, the Subscriber page will be as shown in Figure 4.12.4.22.

This tab allows the administrator to enter information about a damage (the **Add** icon), change this information (the **Edit** icon) and remove unnecessary information (the **Delete** icon).

To add information about a damage, click on the **Add** icon. The **Damage** window appears as shown in Figure 4.12.4.23.

In the **Extension/IP** list, select an extension (telephone number) or IP address for which the information about damage belongs.

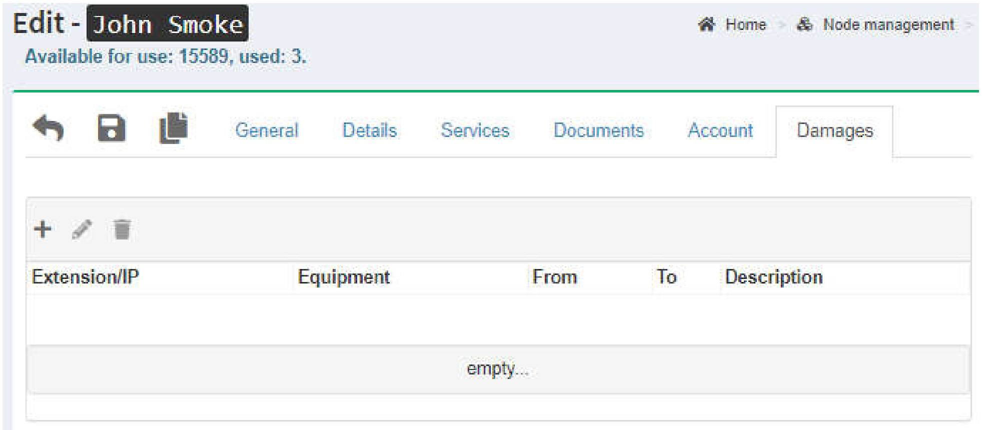


Figure 4.12.4.22

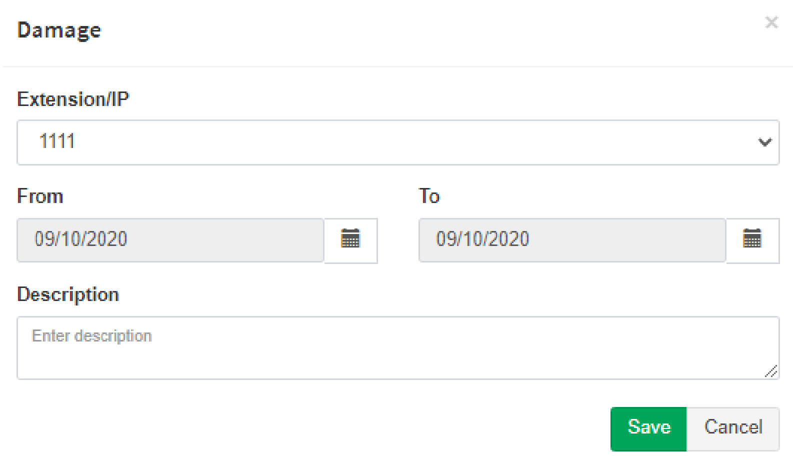


Figure 4.12.4.23

In the **From** and **To** calendar boxes, specify the period when the extension or IP address was not operational. With the proper service settings on the Services configuration page, the services will not be charged during this period.

In the **Description** box, type a description of the damage.

Click **Save**.

A list of damages of the subscriber is displayed in the table of the page shown in Figure 4.12.4.22.

To edit the damage data, select the desired row in the table and click on the **Edit** icon on the toolbar.

To delete the damage data, select the desired row in the table and click on the **Delete** icon on the toolbar.

Creating a linked copy

If you need to change separate parameters of a subscriber, retaining the other previous settings, you should use a linked copy of the subscriber. The current subscriber will be deactivated and a new subscriber with data of the current subscriber will be created. You may change extensions (phone numbers), IP addresses, rate plan, a list of services, and other settings for the new subscriber.

To create a linked copy, on the Subscriber page, click on the **New linked copy** button. The **New linked copy** window appears as shown in Figure 4.12.4.24.

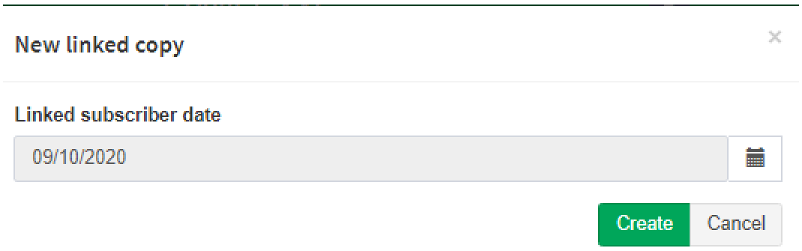


Figure 4.12.4.24

In the **Subscriber add date** calendar box, select a date from which the current subscriber will be deactivated, and a new subscriber will be created.

4.13. Tariscope Observer

The Tariscope Observer service (or the Observer service) is used for collecting call information (CDR, SMDR, AMA, and others) from a telephone system and its initial processing.

A profile of this service must be set individually for each telephone system. You can create a new profile in two ways:

- On the page of the specific telephone system settings (Figure 4.11.1), click on the **Create new profile here** link.
- In the Tariscope menu, select the **Data collection/Observer** → **Observer management** → the **Add** icon on the toolbar.

In both cases a new menu item is created as a subitem of the **Data collection/Observer** item. But in the first case the name of the profile has the same name as the telephone system, and in the second case you should specify the name. All other settings in both cases are the same.

To do any actions with the Tariscope Observers, select the **Observer management** item in the menu. The **Data Collection/Observer** page appears as shown in Figure 4.13.1.

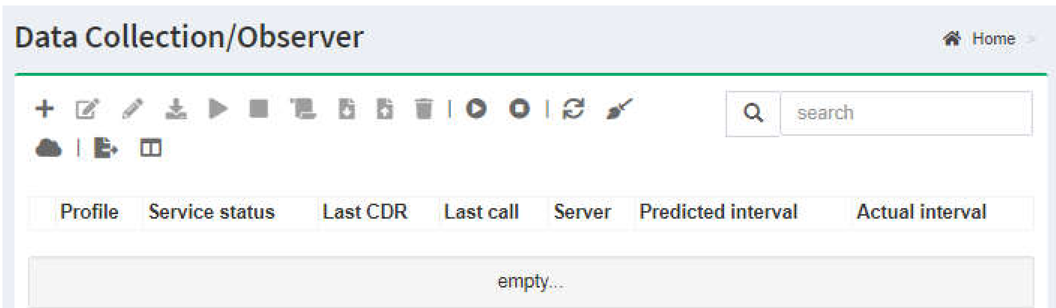


Figure 4.13.1

The page contains the toolbar that includes the following icons:

- **Add**. Allows you to add a new Observer profile.
- **Rename**. Allows you to rename the profile.
- **Edit**. Allows you to edit the profile settings.

- **Service management**. Allows you to specify the Observer service settings, install, uninstall, start, and stop the service.
- **Start**. Allows you to start the selected Observer service.
- **Stop**. Allows you to stop the selected Observer service.
- **Observers' scripts**. Allows you to assign scripts to the specific events of the selected Observer.
- **Import profile**. Allows you to import the profile settings into the selected profile.
- **Export profile**. Allows you to export settings of the selected profile into the external file.
- **Delete**. Allows you to delete the selected Observer profile.
- **Start all**. Starts all Observer services.
- **Stop all**. Stops all Observer services.
- **Refresh remote Observers**. The Tariscope Observer services can work on the remote computer. This icon allows you to refresh the remote services.
- **Clear cache**. Clears the cache memory that is used by Observers.
- **Remote Observers**. Allows you to configure the remote Observer.
- **Export of the table**. Allows you to export Observers table into the external file.
- **Settings column visibility**. Allows you to set columns that will be displayed in the Observers table.

To configure the profile, select the profile row in the Observer table (Figure 4.13.1) and click on the **Edit** icon on the toolbar. An example of the Tariscope Observer profile page is shown in Figure 4.13.2.

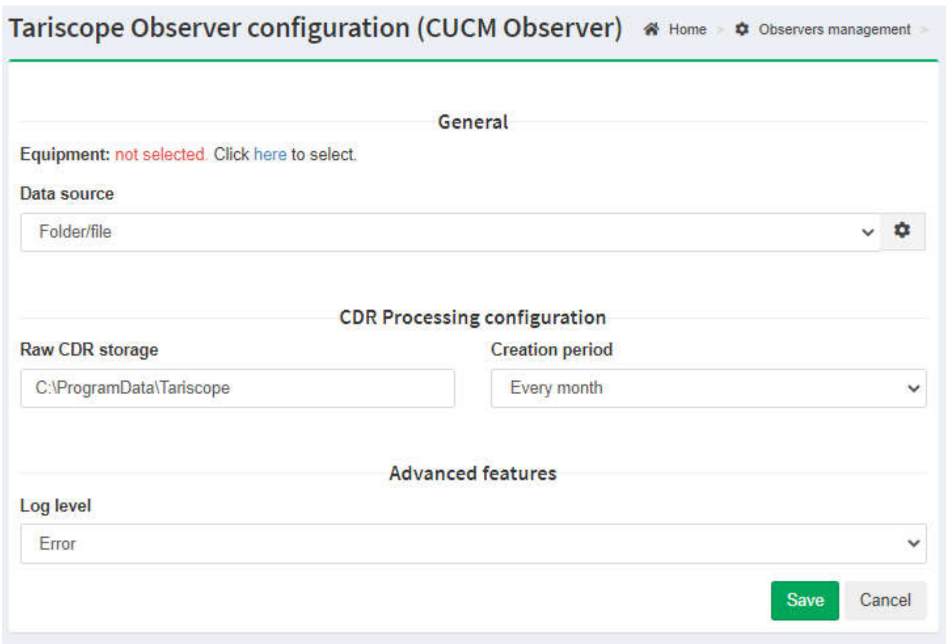


Figure 4.13.2

If the **Equipment** position contains '*not selected*', click on the '**here**' link. The **Equipment selection** window appears. Turn on the switch near the required telephone system and click on the **Select** button.

The **Data source** list contains a list of the available sources from which Observer can get CDR. There are the following options:

- **Folder/file**. The data is contained in a file (files) that may be in a local or network folder.
- **FTP Client**. The Observer service works with telephone system as FTP client.
- **FTP Server**. The Observer service works with telephone system as FTP server.
- **Microsoft Lync**. The Observer service collects CDR from Microsoft Lync.
- **MS SQL Server database**. The Observer service gets the data from Microsoft SQL Server database.
- **MySQL database**. Tariscope gets the data from MySQL database.
- **Rlogin client**. The Observer service works as Rlogin client to collect CDR.
- **Serial port**. The service gets CDR through a serial port.
- **SFTP client**. The Observer service works with telephone system as SFTP client.
- **SFTP server.** The Observer service works with telephone system as SFTP server.
- **SSH client**. The Observer service works with telephone system as SSH client.
- **TCP client**. The Observer service works with telephone system as TCP client.
- **TCP/IP server**. The Observer service works with telephone system as TCP server.
- **UDP Server**. The Observer service works with telephone system as a UDP server.
- **Asterisk AMI**. Observer works with Asterisk using Asterisk Manager Interface (AMI).
- **Alcatel OXO**. Observer collects CDR from Alcatel-Lucent OmniPCX Office (Alcatel-Lucent OXO) using Web services.

Select the desired data source. For example, if your telephone system sends CDR through the FTP client, you should choose the FTP server in the **Data source** list.

You should configure the data source settings. To do this, click on the **Data source configuration** button. The **Data source configuration** window appears. It is specific for each data source. Each window is described in the following sections.

In the **Raw CDR storage** box, type a path to folder where the CDR source files will be stored.

In the **Creation period** list, select the period of time when Tariscope will automatically create a new file to store the original call information. There are options:

- **Single file**. All data are written into a single file.
- **Every day**.
- **Every week**.
- **Every month**.
- **Every year**.
- **Don't create.** Initial CDR data are not saved.

The choice of option depends on the number of calls per day, your requirements to archive data, the free space on the drive, and others. We recommend keeping the original CDR data, because it can be useful when you want to reprocess the data.

In the **Log level** list of the configuration page (Figure 4.13.2), you can choose the Observer logging level. There are following options, where each following option increases logging level:

- **Status**,
- **Critical error**,
- **Error**,
- **Warning**,
- **Information**,
- **Advice**,
- **Debug**.

The log is needed to identify the causes of malfunction of Tariscope Observer. If you using the log have not identified the cause of an incorrect operation of the service, send the log to the technical support service of SoftPI. A log file is in the folder: **...\ProgramData\Tariscope**

It has a name like the name of the Tariscope Observer service with the '**log**' file extension. For example: CUCM.observer.log

To view the Observer log, in the Tariscope menu, select **Data Collection/Observer** → Observer profile → **Service log**.

Click **Save** to keep settings.

Tariscope Observer can start a script on the specific event. The script can execute any actions, for example, to additionally process CDR data, send an email, interact with the telephone system, and others. To use this ability, select the row with the desired profile in the Observer table and click on the **Observers' scripts** icon on the toolbar. The **Observers' scripts** page is opened. An example of the page is shown in Figure 4.13.3.

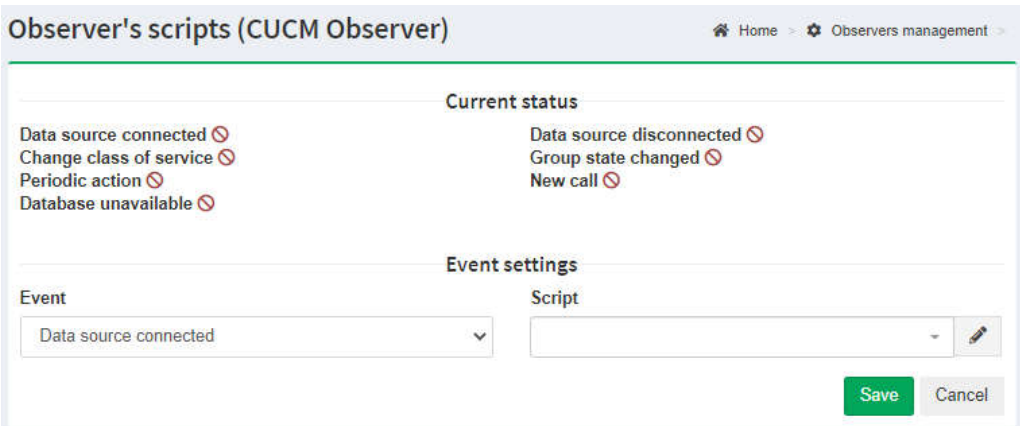


Figure 4.13.3

The page contains a list of events for which you can associate an execution of a specific script.

There are following possible events:

- **Data source connected**. This event means that there is a connection to the telephone system. This event can be helpful when the **Data source disconnected** event is occurred. Tracking such events, you can always know about connecting Tariscope Observer to the telephone system.

- **Data source disconnected**. The event means that Tariscope Observer was disconnected from the telephone system. This event can lead to stop receiving CDR data, and respectively, to the loss of information about the calls made during this period, while the port is closed. Use this event in conjunction with the **Data source connected** event. Tracking these events, you can always know about connecting Tariscope Observer to the telephone system.
- **Change class of service**. This event is relevant only for the Tariscope licenses with the restriction feature. It is used to change phone port parameters of a subscriber, channel, line, or route using the script. The script can change, for example, class of service, or disable, enable subscriber's port, etc.
- **Group state changed**. This event is relevant only for the Tariscope licenses with the restriction feature. It is used to change phone port parameters of a subscriber group. The script can change, for example, class of service for the group of subscribers, or disable, enable subscribers' ports, etc.
- **Periodic action**. This event is intended to periodically execute a script. When you select this event, the **Interval** box appears, where you must set the interval in milliseconds after which the script will be executed. The default value is 60000.
- **New call**. This event occurs when information about a new call was processed. It can be used, for example, to perform certain actions, such as sending e-mails when the call cost is more than a specific value, a call duration is more than a certain duration, the call was made to a specific phone numbers, etc.
- **Database unavailable**. This event occurs when Tariscope gets the database connection error.

To bind an event to a specific script, select the desired event from the **Event** list and select the script from the **Script** list. By default, the list includes scripts from the Tariscope installation. By default, the scripts are stored in the folder: …**\Program Files (x86)\SoftPI\Tariscope\ObserverNg\Scripts**

Tariscope allows you to edit a script. To do this, select the desired script from the **Script** list and click on the **Edit** button located on the right from the list. The **Edit** widow appears where you can do changes. After changes, click **Close**.

You can create your own script and use it with any event.

4.13.1. Folder and file

If you select the **Folder/file** data source and click on the **Data source configuration** button (Figure 4.13.2), the **Data source configuration** window appears as shown in Figure 4.13.1.1.

In the **Folder** box, type the path to a folder that the Tariscope Observer service will scan to collect CDR.

In the **File mask** box, type a pattern to select files from the folder. For example, if you wish to choose only files with CDR extension, type: *.cdr
By default, the * pattern is set. It means that Tariscope Observer will process all files from the folder.

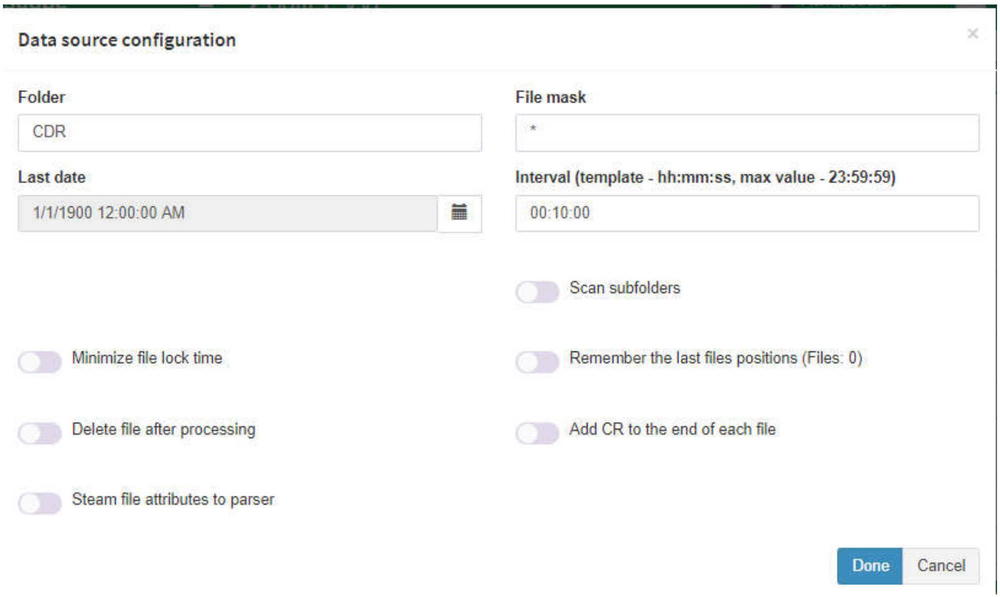


Figure 4.13.1.1

In the **Last date** calendar box, select the date and time from which the scan of the folders is started. The date and time of the last scan will be displayed in the calendar list when the service is working.

In the **Interval** box, specify the scan period. The value in the box is specified in the following format: hh:mm:ss, where hh = hours, mm = minutes, ss = seconds.

If the selected folder contains subfolders and it is required to scan them, turn on the **Scan subfolders** switch.

In case when other programs can have access to files that are handled by Tariscope, to avoid a long absence of access to these files, turn on the **Minimize file lock time** switch.

If the processed data is taken from a file in which the telephone system constantly adds information, turn on the **Remember last files positions** switch.

If you wish to delete the files from the folder after theirs processing, turn on the **Delete file after processing** switch.

Because Tariscope processes only file rows that contain CR at the row end and some PBXs do not add CR to the end of file, to process the last row of such file, turn on the **Add CR to the end of each file** switch.

When the CDR format does not contain information about the year of the calls, turn on the **Steam file attributes to parser** switch. In this case the information about year will get from attributes of the processing file.

Click on the **Done** button to save settings.

4.13.2. FTP client

If you select the **FTP Client** data source and click on the **Data source configuration** button (Figure 4.13.2), the **Data source configuration** window appears as shown in Figure 4.13.1.2.

In the **FTP Server** box, type a domain name or IP address of the FTP server from which Tariscope Observer will receive files. The default name is ‘localhost’.

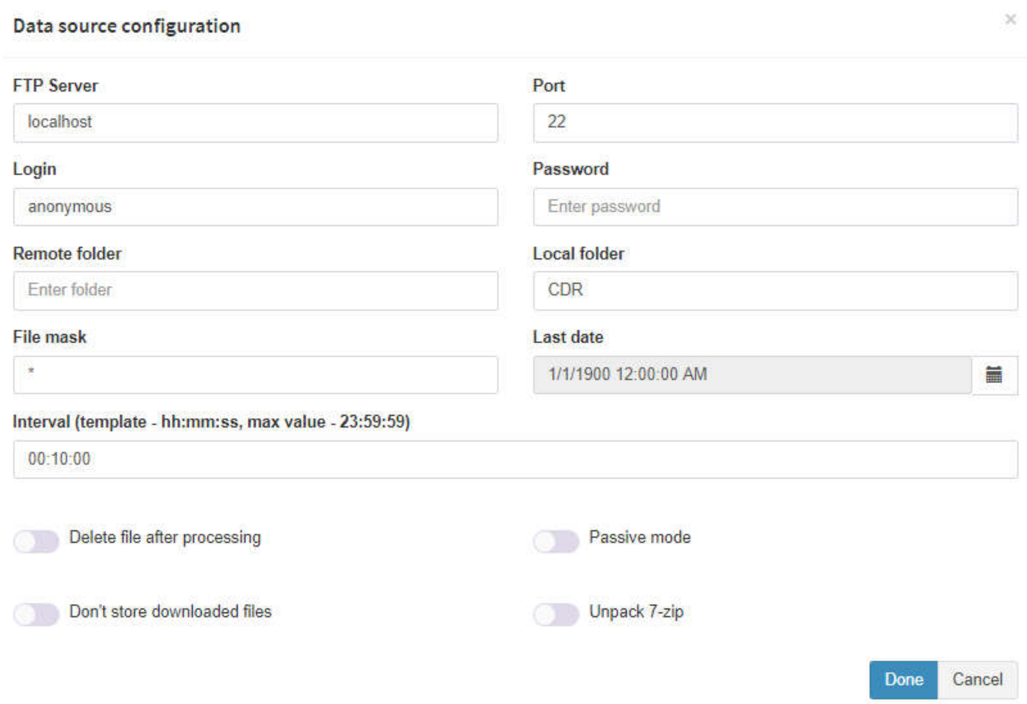


Figure 4.13.2.1

In the **Port** box, type IP port of the FTP server. The default, the value is 22.

In the **Login** box, type a name, and in the **Password** box, type a password with which Tariscope Observer will be connected to the FTP server.

In the **Remote folder** box, type a path to the folder of the FTP server where CDR files are located.

In the **Local folder** box, specify a path to the folder where the original files received from the FTP server will be stored.

If necessary, in the **File mask** box, specify a template to select the required files in the folder. The default pattern is "*", which provides a choice of all the files in the folder.

In the **Last Date** calendar list, select a date from which the scan of folder is started.

In the **Interval** box, specify the scan period. The value in the box is specified in the following format: hh:mm:ss, where hh = hours, mm = minutes, ss = seconds.

If you want to delete files on the FTP server after downloading files, turn on the **Delete files after processing** switch.

If you want the FTP client works in the passive mode, turn on the **Passive mode** switch.

If there is no need to store the downloaded files in the folder after their processing specified, turn on the **Don't store downloaded files** switch.

If the files on the FTP server are stored as 7-zip archives, that is applied in the Alcatel-Lucent OmniPCX Enterprise, turn on the **Unpack 7-zip** switch.

4.13.3. FTP server

If you select the **FTP Server** data source and click on the **Data source configuration** button (Figure 4.13.2), the **Data source configuration** window appears as shown in Figure 4.13.3.1

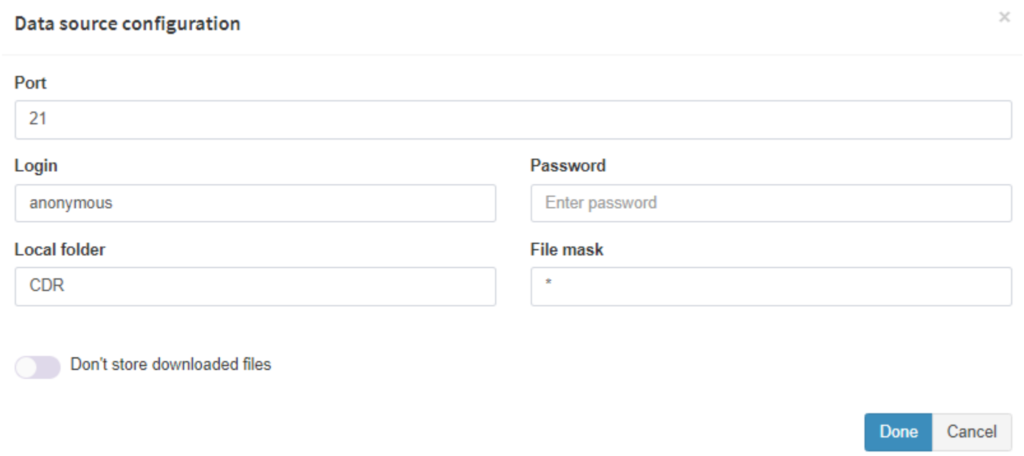


Figure 4.13.3.1

In the **Port** box, type an IP port of the FTP server to which FTP client of telephone system will be connected. By default: 21.

In the **Login** box, type a name, and in the **Password** box, type a password with which the FTP client of telephone system will be connected to the FTP server.

In the **Local folder** box, type the path to a folder where the FTP client will record CDR files.

If necessary, in the **File mask** box, specify a template to select the required files by Tariscope Observer. The default pattern is "*", which provides a choice of all the files in the folder.

If there is no need to store the downloaded files in the folder after their processing specified, turn on the **Don't store downloaded files** switch.

4.13.4. Microsoft Lync

If you select the **Microsoft Lync** data source and click on the **Data source configuration** button (Figure 4.13.2), the **Data source configuration** window appears as shown in Figure 4.13.4.1.

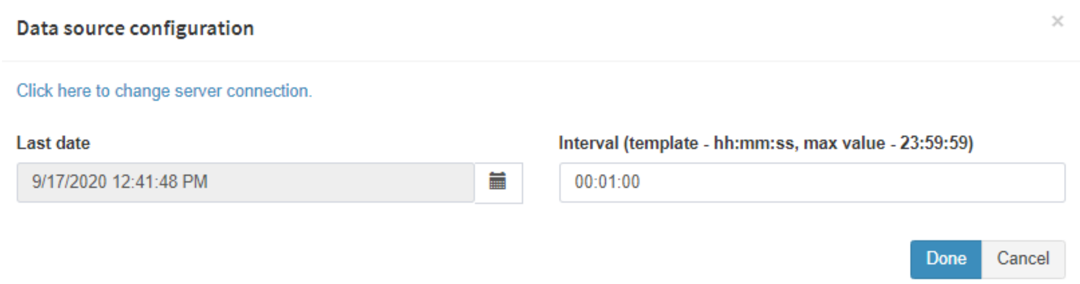


Figure 4.13.4.1

To set the connection parameters to Microsoft Lync, click on the **Click here to change the server connection** link. On the window some additional boxes appear as shown in Figure 4.13.4.2.

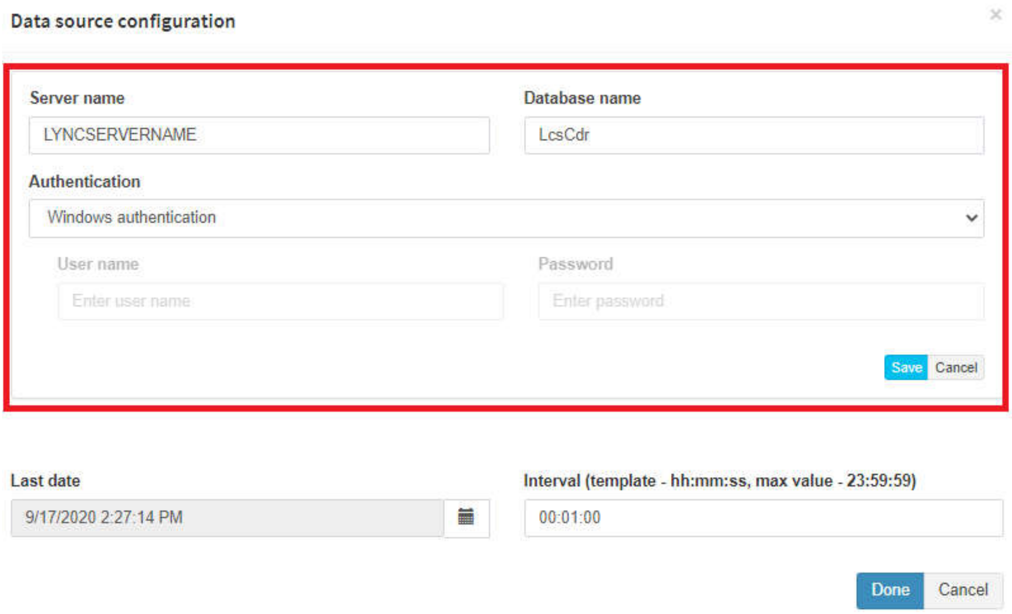


Figure 4.13.4.2

Type the server name in the **Server name** box.

In the **Database name** box, change the Lync database name if you Lync use another database.

In the **Authentication** list, select the authentication type. There are two options:

- Windows authentication.
- SQL Server authentication.

If you select the first option, you do not need to do other actions. In the case you select the second option, you should type the username and password which are used to connect to Microsoft Lync.

Click **Save**. Tariscope will try to connect to Microsoft Lync.

In the **Last date** calendar box, type a date from which Tariscope Observer will start to collect CDR from Microsoft Lync.

In the **Interval** box, set the interval time through which Tariscope Observer will be connected to the Microsoft Lync for checking new CDR data. The value in the box is specified in the following format: hh:mm:ss, where hh = hours, mm = minutes, ss = seconds.

4.13.5. MS SQL Server database

If you select the **MS SQL Server database** data source and click on the **Data source configuration** button (Figure 4.13.2), the **Data source configuration** window appears as shown in Figure 4.13.5.1.

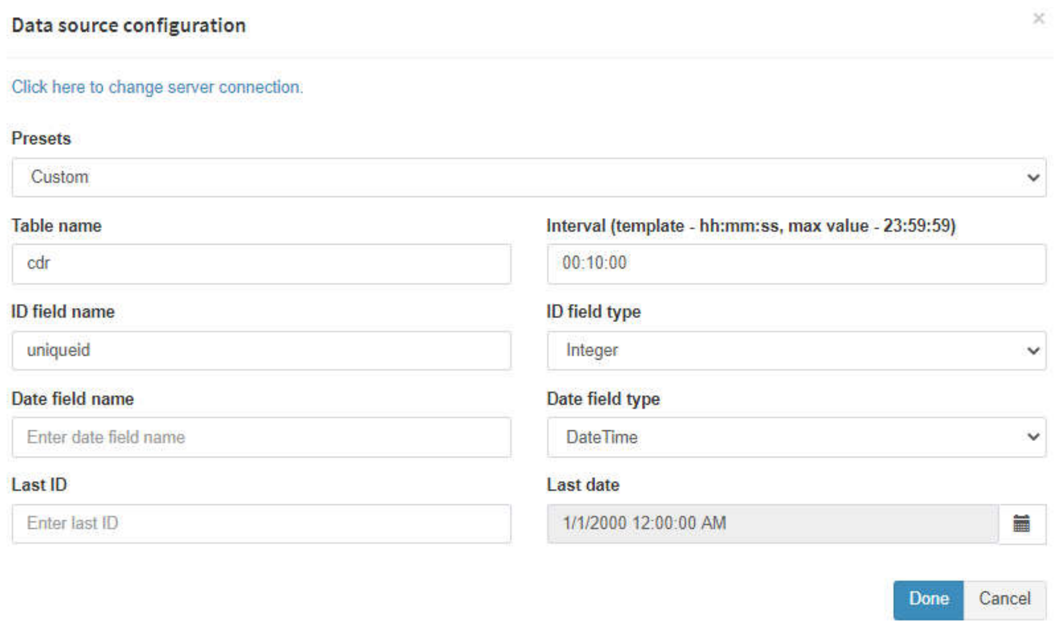


Figure 4.13.5.1

Now this setting is applied only to receive the CDR data from Cisco Unified CallManager version 4.0 (herein "CUCM v4") or Telesystems Oktell.

The **Preset** list allows to select a preset for telephone system. Now the list contains the following options:

- **Custom**,
- **Cisco CallManager 4**,
- **Telesystems Oktell**.

The **Custom** option requires from the Tariscope administrator to manually set all parameters.

If you need to setup Tariscope Observer to working with CUCM v4,:

- select the **Cisco CallManager 4** item,
- click on the **Click here to change server connection** link,
- in the appeared additional boxes, select the required type of authentication. If you use the SQL Server Authentication, type a username and password in the **User name** and **Password** boxes, and click **Save**.

On this the configuration of parameters for CUCM v4 is finished.

You need execute the same actions, if you select the **Telesystems Oktell** item in the **Preset** list.

For the **Custom** option, click on the **Click here to change server connection** link. In the appeared additional boxes, select the required type of authentication and setup parameters.

In the **Table name** box, type a name of the table with CDR data.

In the **ID field name** box, type a name of the field used in the table as a unique identifier.

In the **ID field type** list, select the ID field type. By default, it is Guid.

In the **Data field name** box, type a name of the date field in the table of calls stored in the MS SQL server.

In the **Data field type** list, select the data field type.

If necessary, in the **Last ID** box, type an identifier of record from which will be read the following table entries.

In the **Interval** box, set the interval time. The value in the box is specified in the following format: hh:mm:ss, where hh = hours, mm = minutes, ss = seconds.

In the **Last Date** calendar box, select the time and date from which the data will be processed.

4.13.6. MySQL database

If you select the **MySQL database** data source and click on the **Data source configuration** button (Figure 4.13.2), the **Data source configuration** window appears as shown in Figure 4.13.6.1.

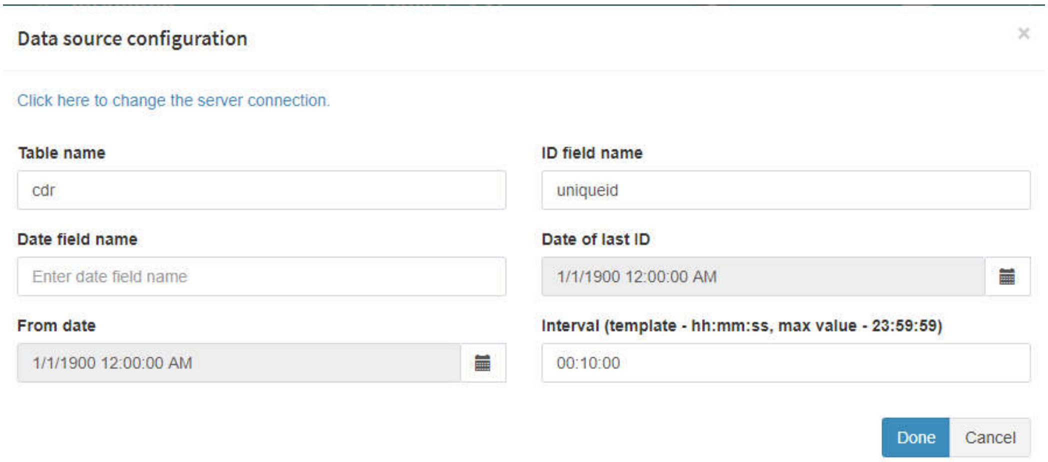


Figure 4.13.6.1

Now this setting is applied only to receive the CDR data from Asterisk.

Click on the **Click here to change the server connection** link. The **Data source configuration** window will expand. The new part of window appears as shown in Figure 4.13.6.2.

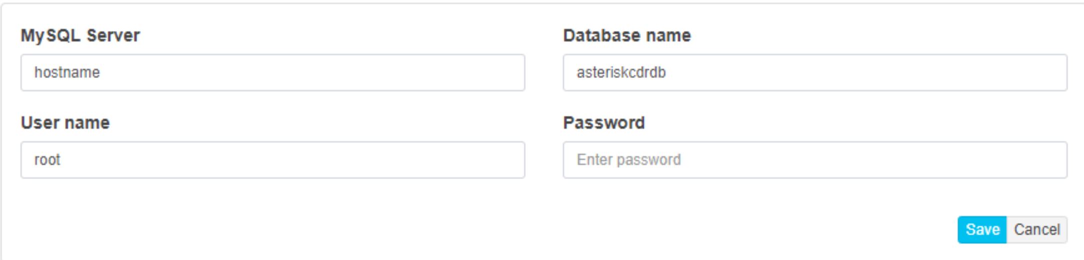


Figure 4.13.6.2

In the **MySQL Server** box, type a name of MySQL Server or its IP address to which the Tariscope Observer service will be connected.

In the **Database name** box, type the database name. For Asterisk it is ***asteriskcdrdb***.

In the **User** and **Password** boxes, type a username and password which are used to connect to MySQL Server.

Click **Save**. The additional part of the window will be hidden.

In the **Table name** box, type the table name with CDR data. For Asterisk it is ***cdr***.

In the **ID Field name** box, type a name of the field used in the table as a unique identifier. Use the ***uniqueid*** name for Asterisk.

In the **Date Field name** box, type a name of the date field in the table of calls stored in the MySQL database. It is ***calldate*** for Asterisk.

In the **Date of last ID** calendar box, the appropriate date and time will be displayed.

In the **From date** calendar box, select the time and date from which the data will be taken in handling.

In the **Interval** box, set the interval time through that Tariscope Observer will be connected to MySQL server to check new CDR. The default value is 600 seconds: 00:10:00

Click **Done** to keep settings.

4.13.7. Rlogin client

If you select the **Rlogin client** data source and click on the **Data source configuration** button (Figure 4.13.2), the **Data source configuration** window appears as shown in Figure 4.13.7.1.

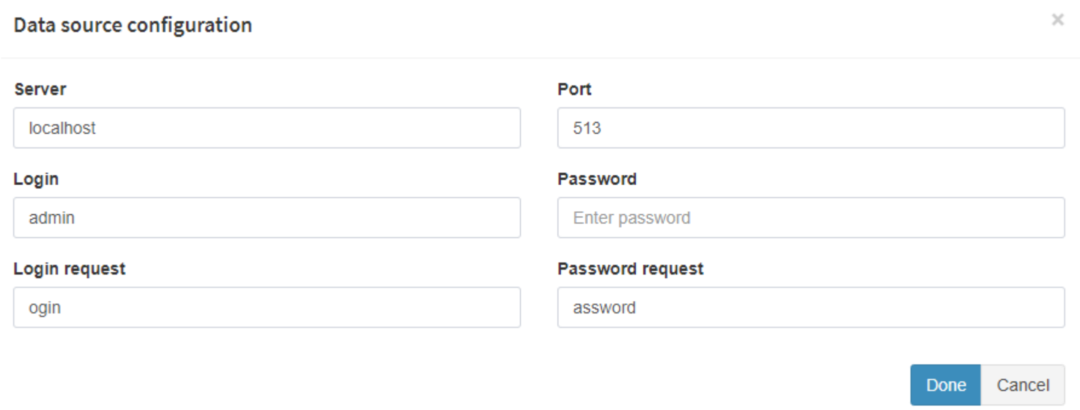


Figure 4.13.7.1

In the **Server** box, leave the value of 'localhost' if Tariscope was installed on the same computer where PBX works. Otherwise, type IP address of PBX.

In the **Port** box, type IP port number of a Rlogin Server of PBX. By default: 513.

In the **Login** and **Password** boxes, type a username and password which are used to connect to Rlogin Server of PBX.

If necessary, specify the values in the **Login request** and **Password request** boxes.

Click **Done** to keep the settings.

4.13.8. Serial port

If you select the **Serial port** data source and click on the **Data source configuration** button (Figure 4.13.2), the **Data source configuration** window appears as shown in Figure 4.13.8.1.

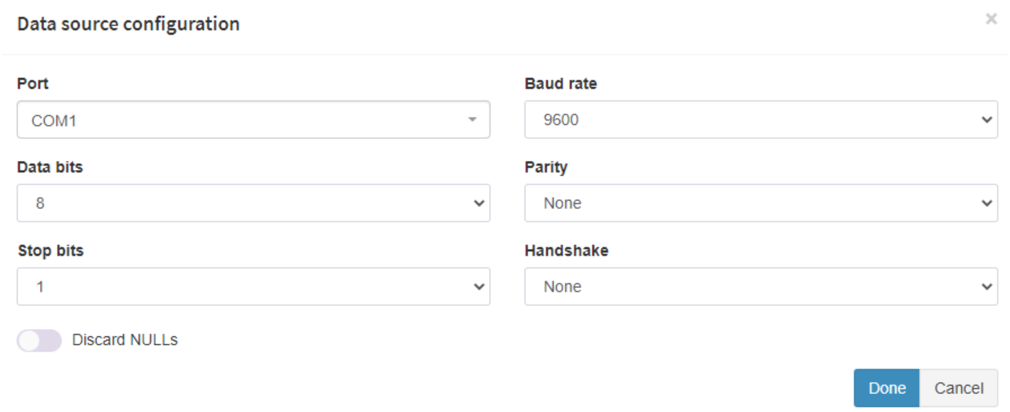


Figure 4.13.8.1

In the **Port** list, select a port number through which the Tariscope Observer service will collect CDR data.

In the following lists, specify parameters of the serial port which must correspond to PBX parameters:

- **Baud rate**,
- **Data bits**,
- **Parity**,
- **Stop bit**,
- **Handshake**.

If CDR format contains null characters, turn on the **Discard nulls** switch.

Click **Done** to keep the settings.

4.13.9. SFTP client

If you select the **SFTP client** data source and click on the **Data source configuration** button (Figure 4.13.2), the **Data source configuration** window appears as shown in Figure 4.13.9.1.

In the **SFTP Server** box, type a domain name or IP address of the SFTP server from which Tariscope Observer will receive files. The default name: localhost.

In the **Port** box, type an IP port which the SFTP server uses.

In the **Login** box, type a name, and in the **Password** box, type a password with which Tariscope Observer will be connected to the SFTP server.

In the **Remote path** box, type a path to a folder of the SFTP server where CDR files are located.

In the **Local folder** box, specify a path to the folder where the original files received from the SFTP server will be stored on the Tariscope server.

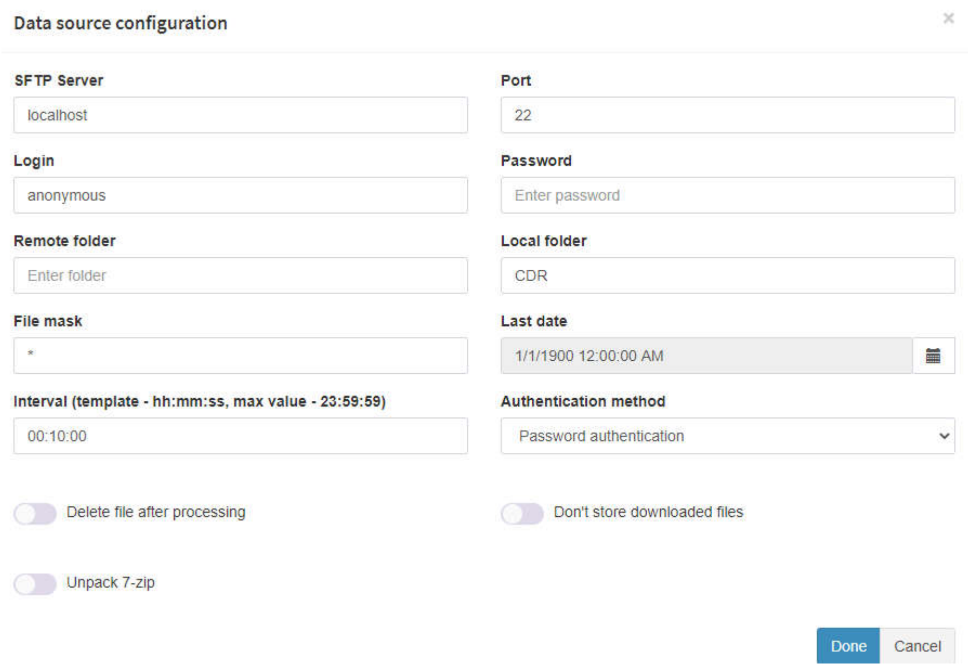


Figure 4.13.9.1

If necessary, in the **File mask** box, specify a template to select the required files in the remote folder. The default pattern is "*", which provides a choice of all the files in the folder.

In the **Last date** calendar list, select a date from which the scan of folder is started.

In the **Interval** box, set a time period through which Tariscope Observer will be connected to the SFTP server for checking for new CDR files. The default value is 00:10:00. This is 600 seconds.

In the **Authentication method** list, select the required method. There are two options:

- **Password authentication**.
- **Keyboard or password authentication**.

If you want to delete files on the SFTP server after downloading them, turn on the **Delete files after processing** switch.

If there is no need to store the downloaded files in the folder specified in the **Local folder** box, turn on the **Don't store the downloaded files** switch.

If CDR data were archived using 7-zip, turn on the **Unpack 7-zip** switch.

Click **Done** to keep the settings.

4.13.10. SFTP server

If you select the **SFTP server** data source and click on the **Data source configuration** button (Figure 4.13.2), the **Data source configuration** window appears as shown in Figure 4.13.10.1.

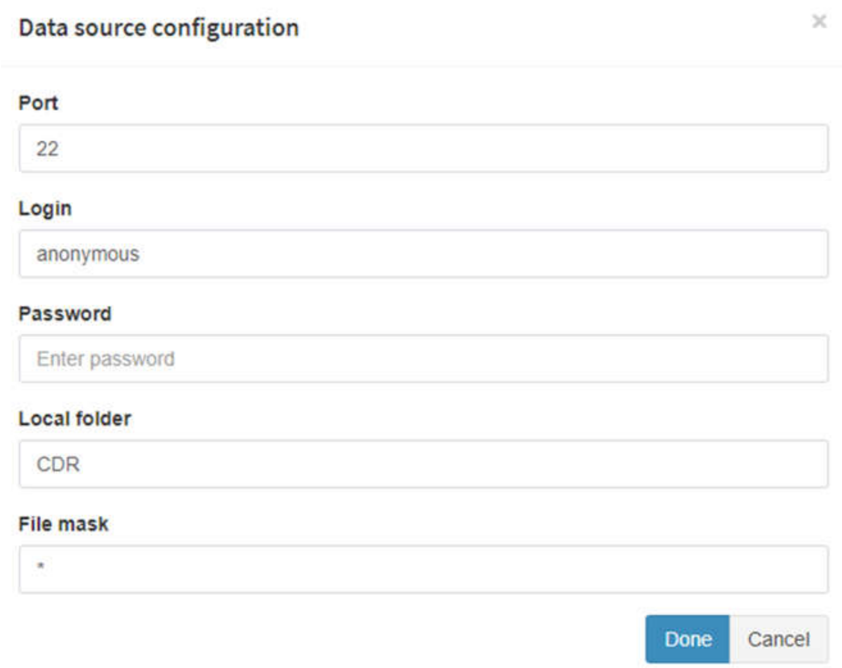


Figure 4.13.10.1

In the **Port** box, type IP port of the SFTP server to which the SFTP client of telephone system will be connected. By default: 22.

In the **Login** box, type a name, and in the **Password** box, type a password with which the SFTP client of telephone system will be connected to the SFTP server.

In the **Local** folder box, type the path to a folder where the SFTP client will write CDR files.

If necessary, in the **File mask** box, specify a template to select the required files by Tariscope Observer. The default pattern is "*". That provides a choice of all the files in the folder.

Click **Done** to keep the settings.

4.13.11. SSH client

If you select the **SSH client** data source and click on the **Data source configuration** button (Figure 4.13.2), the **Data source configuration** window appears as shown in Figure 4.13.11.1.

In the **Server** box, leave the value of 'localhost' if Tariscope was installed on the same computer where your telephone system works. Otherwise, type IP address of PBX.

In the **Port** box, type IP port number of SSH Server of the telephone system. By default: 22.

In the **Login** and **Password** boxes, type a username and password which are used to connect to SSH Server of the telephone system.

In the **Authentication method** list, select the required method. There are two options:

- **Password authentication**.
- **Keyboard or password authentication**.

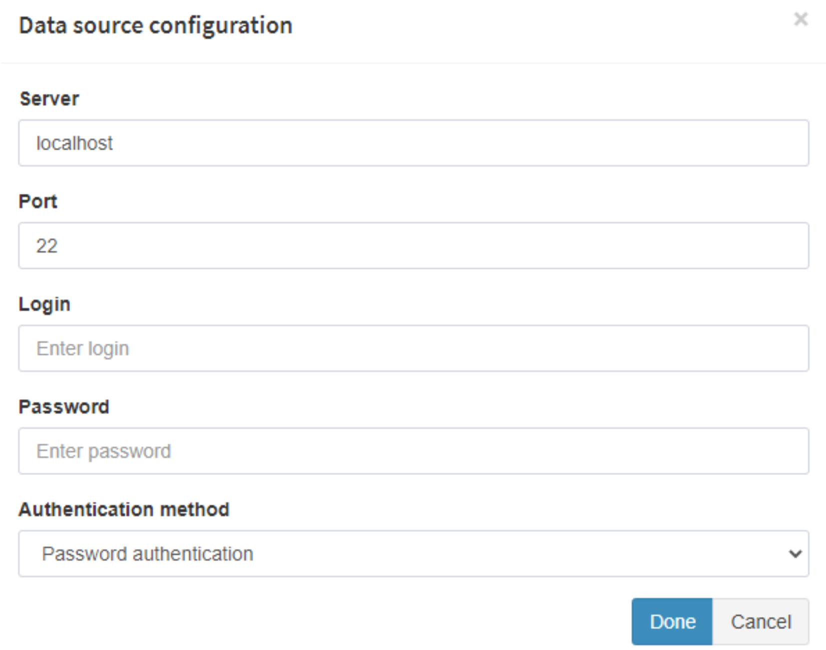


Figure 4.13.11.1

Click **Done** to keep the settings.

4.13.12. TCP client

If you select the **TCP/IP client** data source and click on the **Data source configuration** button (Figure 4.13.2), the **Data source configuration** window appears as shown in Figure 4.13.12.1.

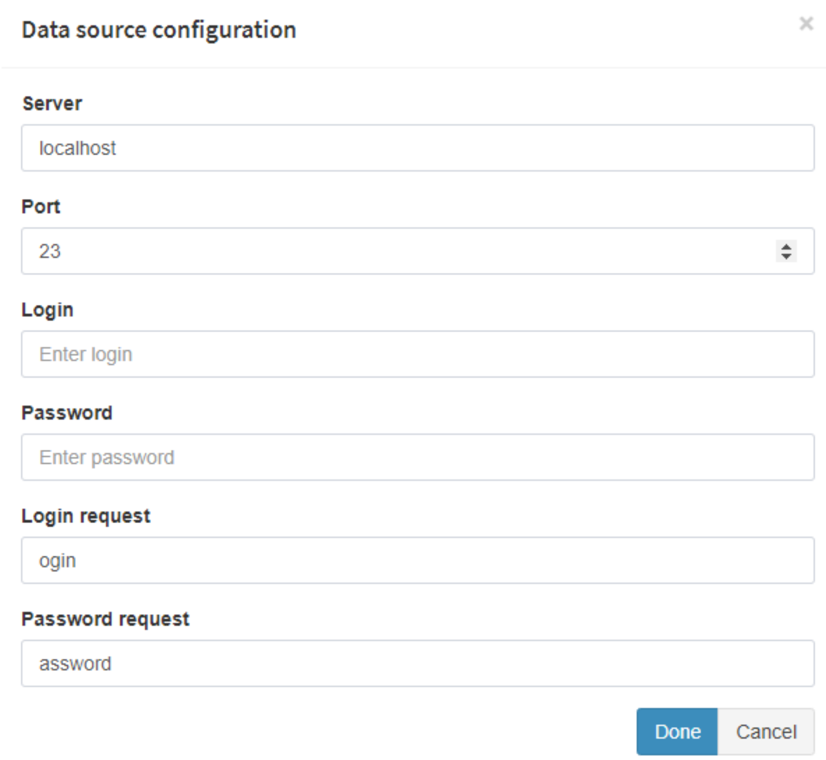


Figure 4.13.12.1

In the **Server** box, leave the value of 'localhost' if Tariscope was installed on the same computer where your telephone system works. Otherwise, type the IP address of the telephone system.

In the **Port** box, type IP port number of TCP Server of the telephone system. By default: 23.

In the **Login** and **Password** boxes, type a username and password which are used to connect to TCP Server of the telephone system.

If necessary, specify the values in the **Login request** and **Password request** boxes.

Click **Done** to keep the settings.

4.13.13. TCP/IP server

If you select the **TCP/IP client** data source and click on the **Data source configuration** button (Figure 4.13.2), the **Data source configuration** window appears as shown in Figure 4.13.13.1.

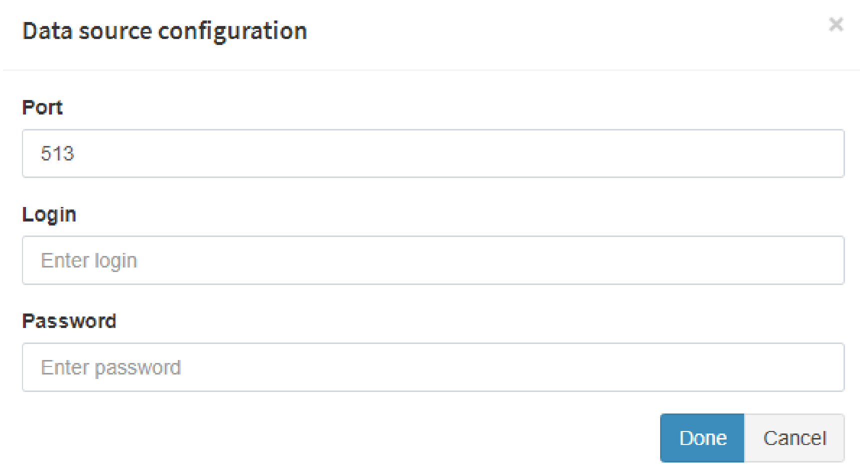


Figure 4.13.13.1

In the **Port** box, type IP port number to which the TCP client of your telephone system will be connected. By default: 513.

In the **Login** and **Password** boxes, type a username and password which will be used by the TCP client to connect.

Click **Done** to keep the settings.

4.13.14. UPD server

If you select the **UDP Server** data source and click on the **Data source configuration** button (Figure 4.13.2), the **Data source configuration** window appears as shown in Figure 4.13.14.1.

In the **Port** box, type IP port number to which UDP client of your telephone system will be connected. By default: 514.

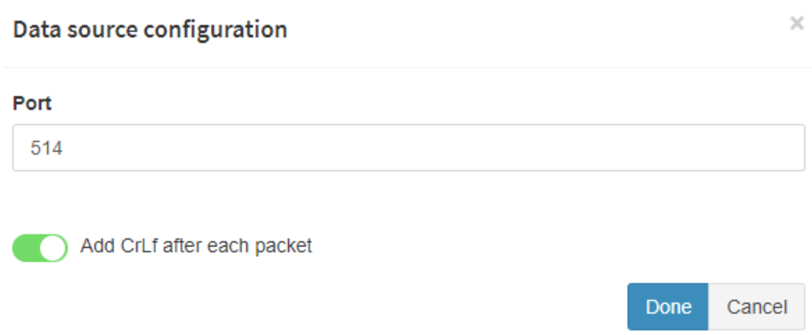


Figure 4.13.14.1

If CDR information in UDP packets does not contain characters of the end or beginning of the string (such as for the syslog protocol), turn on the **Add CrLf after each packet** switch. By default, the switch is on.

Click **Done** to keep the settings.

4.13.15. Asterisk AMI

This configuration is applied only to Asterisk when Asterisk Manager Interface (AMI) is used.

If you select the **Asterisk AMI** data source and click on the **Data source configuration** button (Figure 4.13.2), the **Data source configuration** window appears as shown in Figure 4.13.15.1.

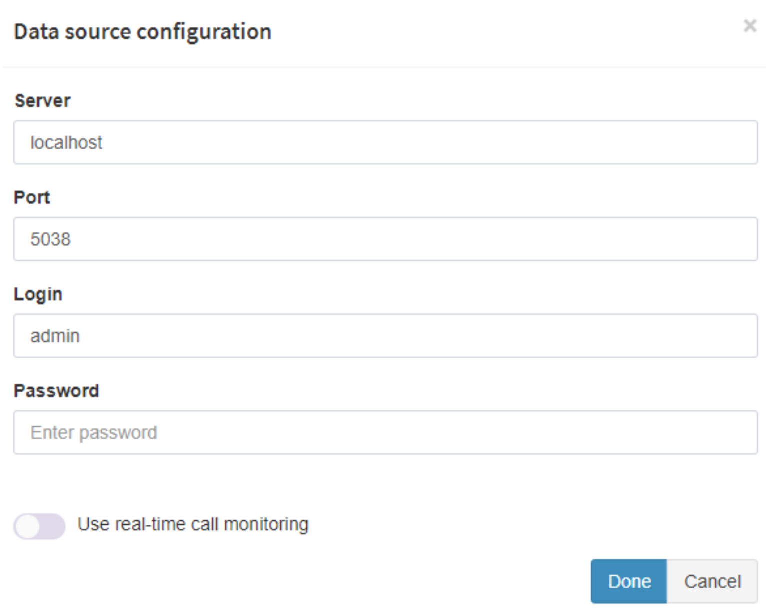


Figure 4.13.15.1

In the **Server** box, leave the value of 'localhost' if Tariscope was installed on the same computer where your telephone system works. Otherwise, type the IP address of the telephone system.

In the **Port** box, type IP port number of TCP Server of the telephone system. By default: 5038.

In the **Login** box, type a username used to connect to Asterisk.

In the **Password** box, type a password.

If you need the real-time monitoring of calls made through Asterisk, turn on the **Use real-time call monitoring** switch.

Click **Done** to keep the settings.

4.13.16. Alcatel OXO

These settings are applied only for Alcatel-Lucent OmniPCX Office (OXO) to collect CDR using Web services. This ability is supported for Alcatel-Lucent OXO platforms from Compact Edition to e-Business Edition.

If you select the **Alcatel OXO** data source and click on the **Data source configuration** button (Figure 4.13.2), the **Data source configuration** window appears as shown in Figure 4.13.16.1.

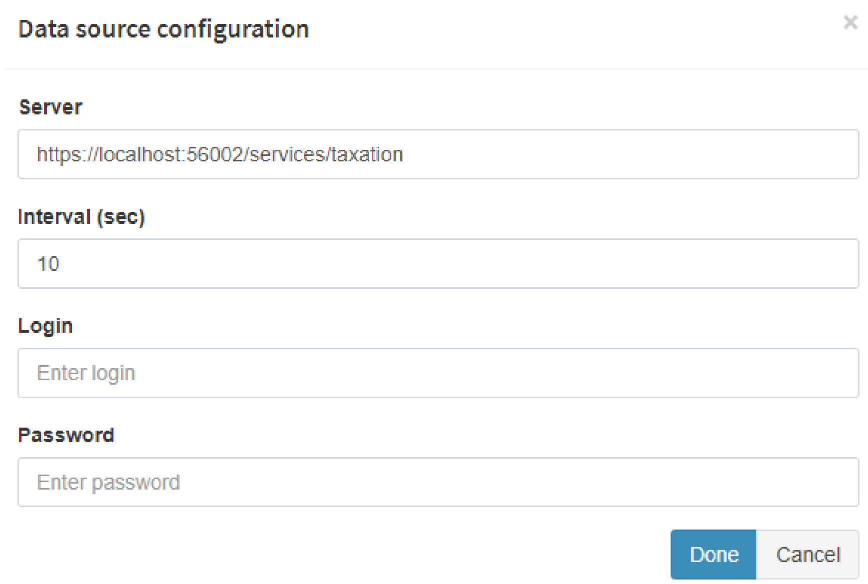


Figure 4.13.16.1

In the **Server** box, type IP address of your Alcatel-Lucent OXO instead of 'localhost'.

In the **Interval** box, specify a period through which Tariscope Observer will perform requests to PBX to get CDR.

In the **Login** box, enter a username, which will be used to connect to PBX.

In the **Password** box, enter a password.

Click **Done** to keep the settings.

4.13.17. Tariscope Observer management

To install, start, stop, disable the Tariscope Observer service, in the Tariscope menu, select the **Data collection/Observer** → the specific service → **Service management**. The Tariscope Observer page appears an example of which is shown in Figure 4.13.17.1.

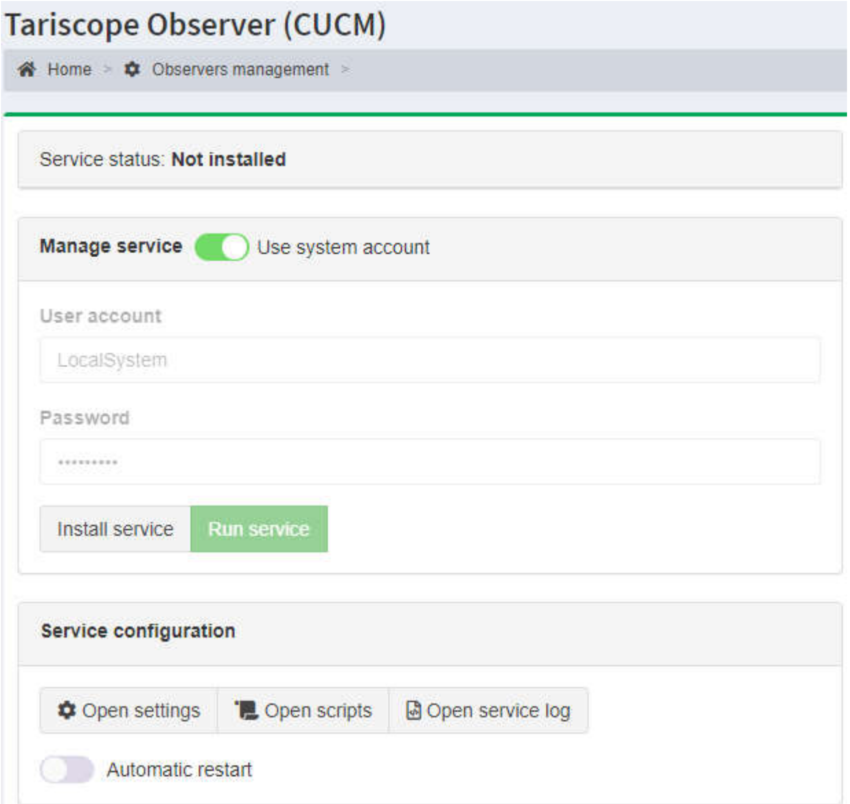


Figure 4.13.17.1

On this page the **Service status** position displays the current status of the service. Initially, in this position, the status of service: "Not installed".

The **Manage service** switch provides the use of your system account or a user account for this service. By default, the system account of ***LocalSystem*** is used.

If you want to use a user account, turn off the **Manage service** switch. In the **User account** and **Password** boxes you, enter a username and password that are used in Windows. The user rights will be used by Tariscope Observer.

<u>To install the service</u>, click on the **Install service** button. In the **Service status** position the value of "Stopped" is displayed. The **Install service** button is replaced to the **Uninstall service** button and the **Run service** button is active.

<u>To start the service</u>, click on the **Run service** button. In the **Service status** position the value of "Running" is displayed. The **Run service** button is replaced to the **Stop service** button. The **Uninstall service** button is inactive.

After the service was started, we recommend clicking on the **Open service log** button or select the **Service log** item of the menu and make sure there are no errors. If the log contains errors, stop the service, return to the settings, and validate the configuration parameters. After that, try to start the service.

To monitor the results of the processing the CDR, select the **Last calls** menu item where a table with calls is displayed.

If you select the **Current data file (CDR/SMDR)** menu item, you can see CDR (SMDR) data that Tariscope Observer receives.

<u>To stop the service</u>, click on the **Stop service** button. The **Stop service** button is replaced to the **Run service** button, and the **Uninstall service** button is active. The **Service status** position displays "Stopped".

<u>To uninstall the service</u>, click on the **Uninstall service** button.

It is possible situations when the Tariscope Observer service will be stopped by Windows. To automatically restart the service, before its start, turn on the Automatic restart switch.

As we mentioned above, Tariscope Observer has a log. You can view it from the **Service log** page. An example of the page is shown in Figure 4.13.17.2.

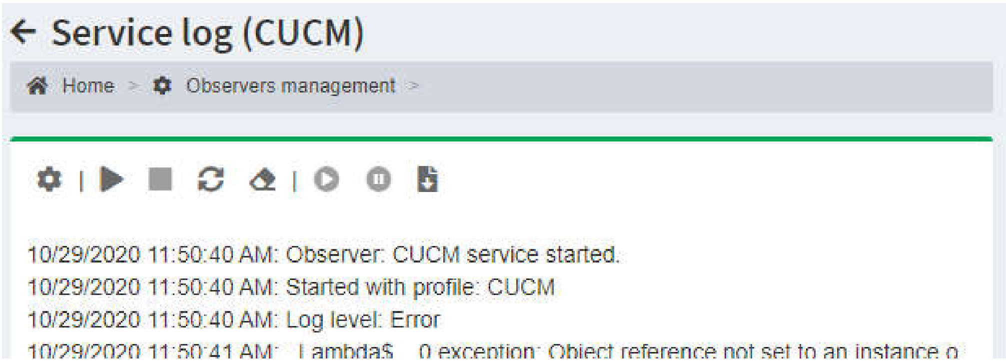


Figure 4.13.17.2

The toolbar of the page contains the following icons:

- **Back to Observer management**. Provides a link to the **Data Collection/Observer** page.
- **Run service**. Allows you to run the service if it was stopped.
- **Stop service**. Allows you to stop the service if it worked.
- **Refresh**. Refreshes the log.
- **Clear service log**. Clears the service log.
- **Start reading the log**. Restores the current log display if it was stopped.
- **Stop reading the log**. Allows you to stop displaying the new log data.
- **Download log**. Allows you to download the log.

A Tariscope Observer log is saved in the folder: **…\ProgramData\Tariscope**. It is named: ‘Observer profile name’.**Observer.log**

4.13.18 Remote Tariscope Observers

Sometimes Tariscope users have a need to receive call data (CDR, SMDR) from a remote telephone system. Usually there is no problem if such a telephone system can use Internet protocols such as TCP, FTP, SSH and others. But what to do if the telephone system has only a serial port? In this case, we suggest using the remote Tariscope Observers, which are installed on a computer located next to the telephone system.

To install remote Observers, you need a computer with the operating system Windows 10, 8.1, 8, Windows Server 2019, 2016. On such a computer, you must run the Tariscope installation package, as described in section 1.1. At the component selection stage (Figure 1.1.4), select **Tariscope applications only or update**. In the **Tariscope Components** window, select only the **Observer server** item, as shown in Figure 4.13.18.1. You should not select any other components.

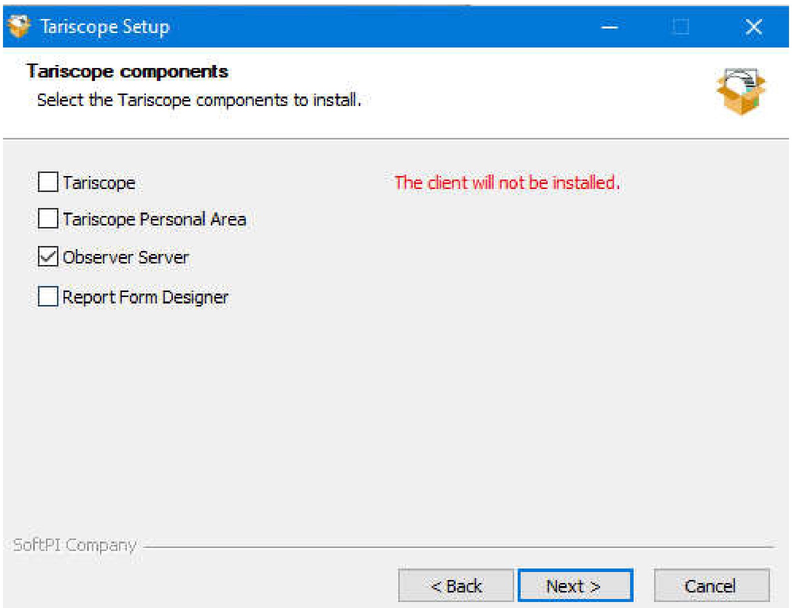


Figure 4.13.18.1

On the computer where the remote Observer server is installed, if the firewall is used, it is necessary to create outgoing rules for port 8001 (this is the Tariscope server port), 1433, 1434 (Microsoft SQL Server ports). You also need to create an incoming rule for the IP port on which the Observer server will run. This IP port is set in the subsequent configuration.

On the Windows system of the remote computer, click on the **Start** button. Select the **Tariscope** folder and select the Observer server item. The **Server Control Panel** window appears, an example of which is shown in Figure 4.12.18.2.

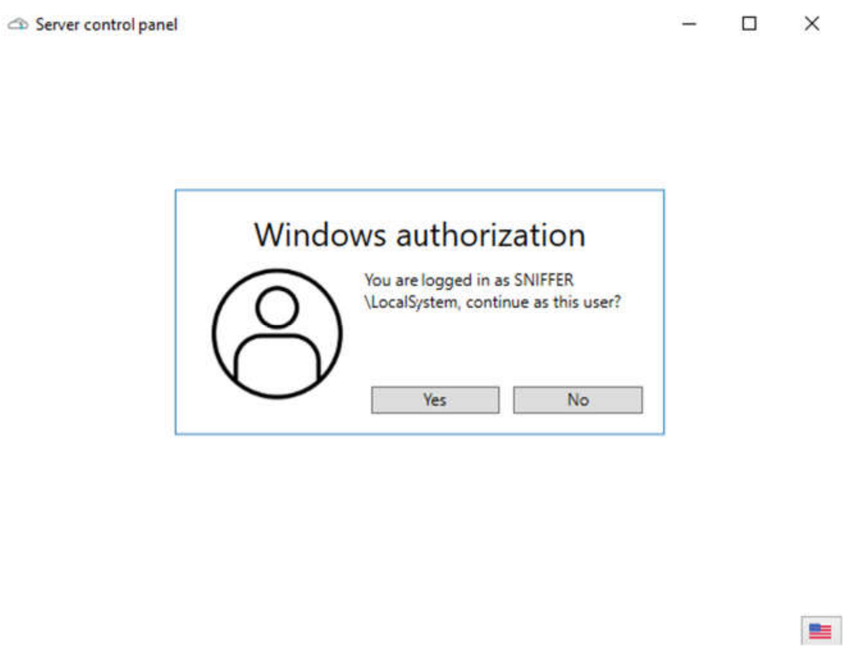


Figure 4.12.18.2

The window displays the Windows user settings with which the Tariscope Observer services will be started. If you would like to run Observer with the current users' rights, click **Yes.** If you want to run Observer with rights of another Windows user, click on the **No** button and specify the username and password. The window of the **Server Control Panel** will be as shown in Figure 4.13.18.3.

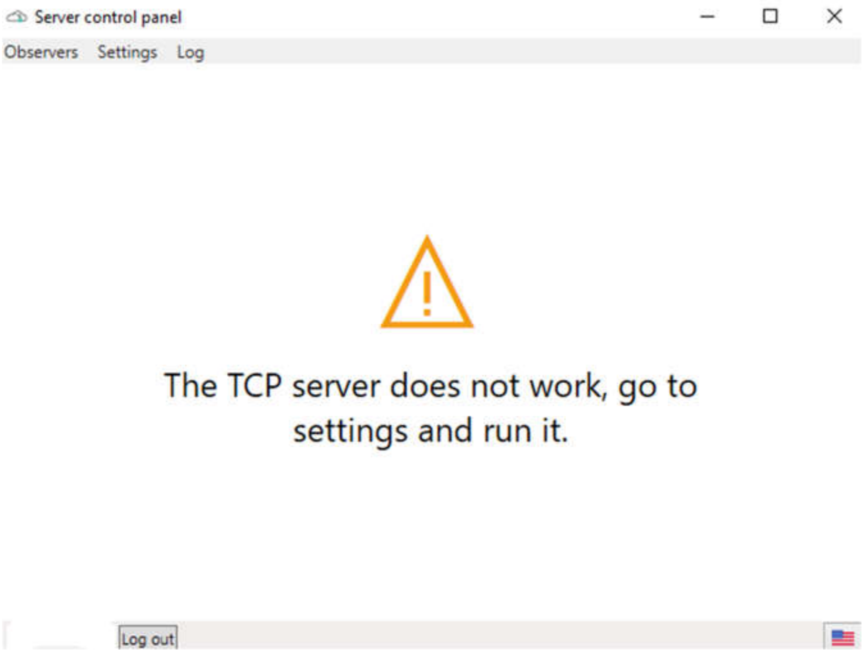


Figure 4.13.18.3

Select the **Settings** item in the menu, the window will be as shown in Figure 4.13.18.4.

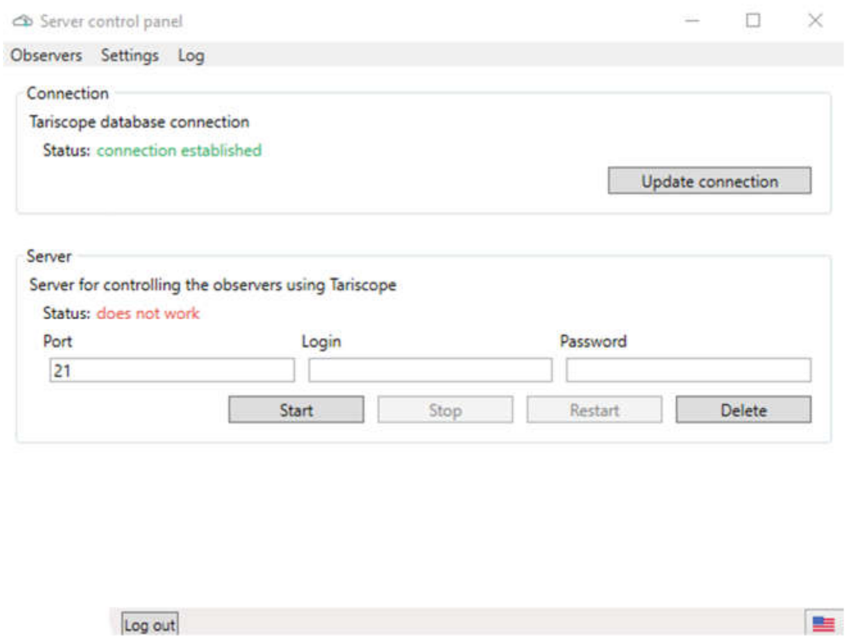


Figure 4.13.18.4

Click the **Update connection** button. The **SQL Server Connection** window appears. An example of the window is shown in Figure 4.13.18.5.

In the **Server name or IP** box, enter the IP address (name) of the computer on which the SQL server with the Tariscope database was installed.

If your SQL server has the name other than the default, then in the **SQL Server Name** box, enter this name.

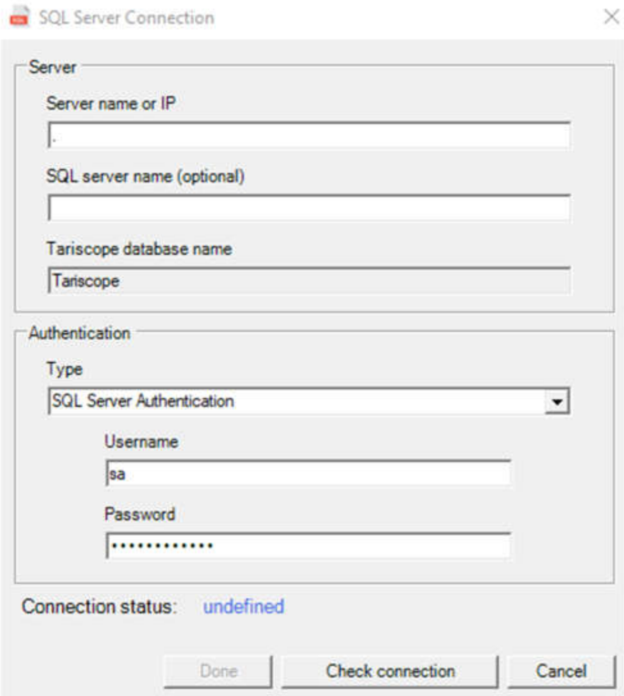


Figure 4.13.18.5

In the **Authentication Type** list, select **SQL Server Authentication**. In the **Username**, specify the username with which the connection to the SQL server will be performed, and in the **Password** position, specify the password. This user must have permissions to work with the Tariscope database.

Click the **Check connection** button. If the parameters are entered correctly, then in the **Connection status** position will be displayed: ***connected***. Otherwise, check the entered parameters and repeat the connection check.

Click the **Done** button.

In the **Server** section (Figure 4.13.18.4), specify the parameters of the TCP server through which the Observer server will communicate with Tariscope.

In the **Port** box, specify IP port.

In the **Login** and **Password**, specify the appropriate parameters. They will be used by the Tariscope system to connect to this server. These fields may be empty.

Click on the **Start** button. When the server service starts normally, in the **Status** position the value **'running'** will be displayed.

Return to the main Tariscope application. Select in the menu **Data Collection/Observer → Observers management**.

The **DataCollection/Observer** page is displayed. An example of the page is shown in Figure 4.13.18.6.

On the toolbar, click on the **Remote observers** icon. The **Servers** page appears. An example of the page is shown in Figure 4.13.18.7.

On this page, you need to set the server parameters of the remote Observer. On the toolbar, click on the **'+'** icon (**Add**). The **Server** window appears (Figure 4.13.18.8).

In the **Name** box, enter an arbitrary server name.

In the **Host** box, specify the IP address of the computer on which the Observer server was installed.

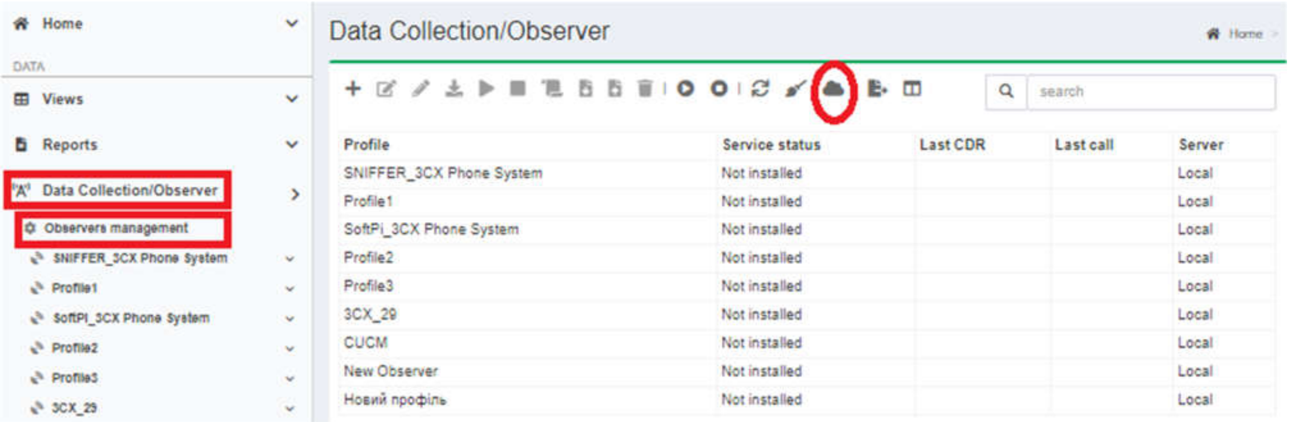


Figure 4.13.18.6

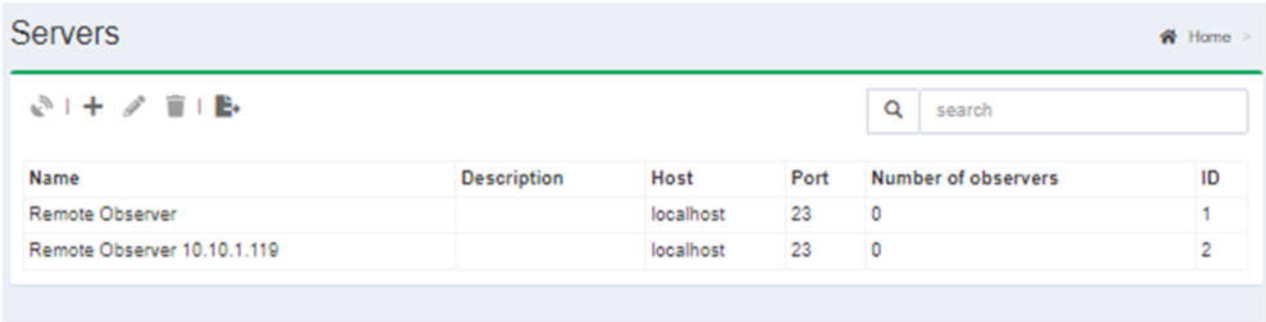


Figure 4.13.18.7

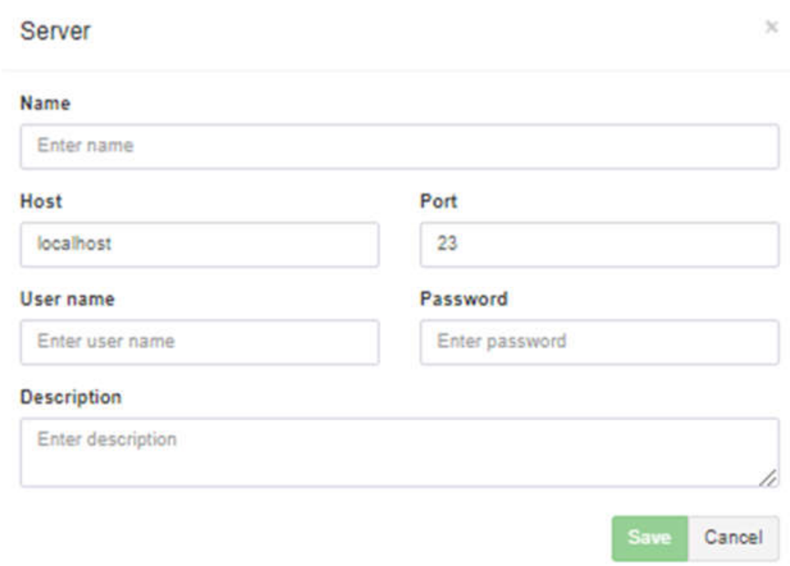


Figure 4.13.18.8

In the **Port** box, specify the IP port that you specified on the Observer server (Figure 4.13.18.4).

In the **User name** and **Password** boxes, specify the username and password specified in the Observer server (Figure 4.13.18.4).

If necessary, in the **Description** box, you can leave some comments.

Click on the **Save** button. The **Servers** page displays a string with the parameters of the entered server. Figure 4.13.18.9 shows an example of this page with two remote Observer servers.

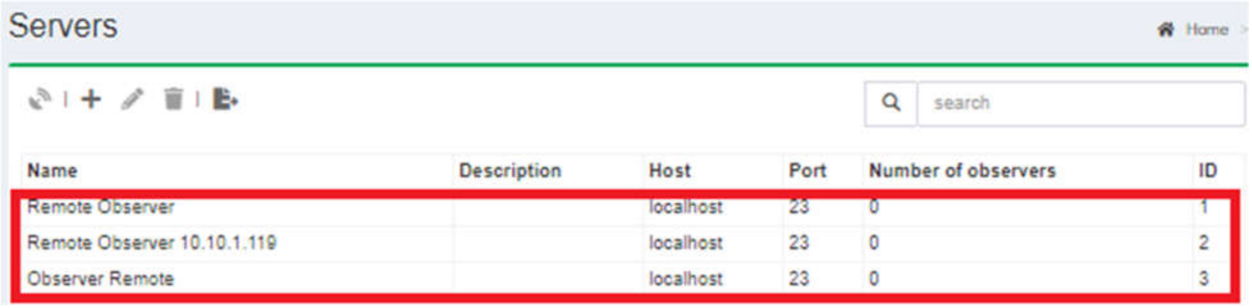


Figure 4.13.18.9

Select the line with the desired server and click on the toolbar on the **List of observers** icon. The page displays a list of remote Observer services. If no Observer services have been added to the server of the remote Observer, the service table will be empty. Figure 4.13.18.10 shows an example with two Observer services already added on the remote server.

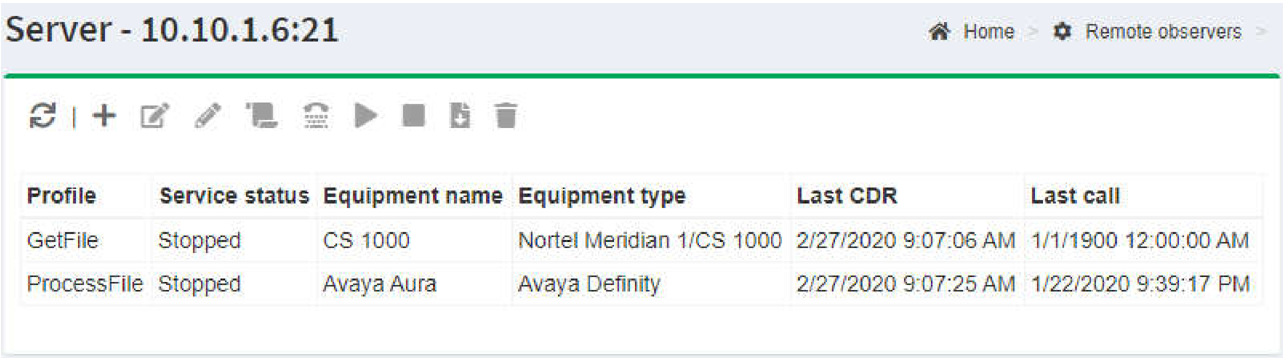


Figure 4.13.18.10

You can configure remote Observer, start and stop them on this page using the toolbar icons. At the same time, you can go to the **Data Collection/ Observer** page (Figure 4.13.18.6), where you can perform the same actions.

The Observer server contains a log file. To access it, click on the menu item **Service log**. This log is also available from the Tariscope application. To do this, select the required remote server (Figure 4.13.18.10) and click on the **Download log** icon on the toolbar.

4.14. Notifications and mailing

To execute the notifications and mailing settings, you should know an email address, from which Tariscope will execute mailing, and its parameters such as password, SMTP server name, IP port, and authentication. If you do not know these settings, contact to your technician or email provider.

To configure notifications and mailing settings, in the Tariscope menu, select **Additional options** → **Notifications and mailing**. The **Notifications and mailing** page appears as shown in Figure 4.14.1

In the **SMTP Server** box, enter the SMTP server name. For example, if you have the Gmail email address, you should enter: ***smpt.gmail.com***

In the **Port** box, enter IP port of SMTP server. Enter the value of ***587*** for Gmail.

If your SMTP server requires an authentication, turn on the **Authentication** switch.

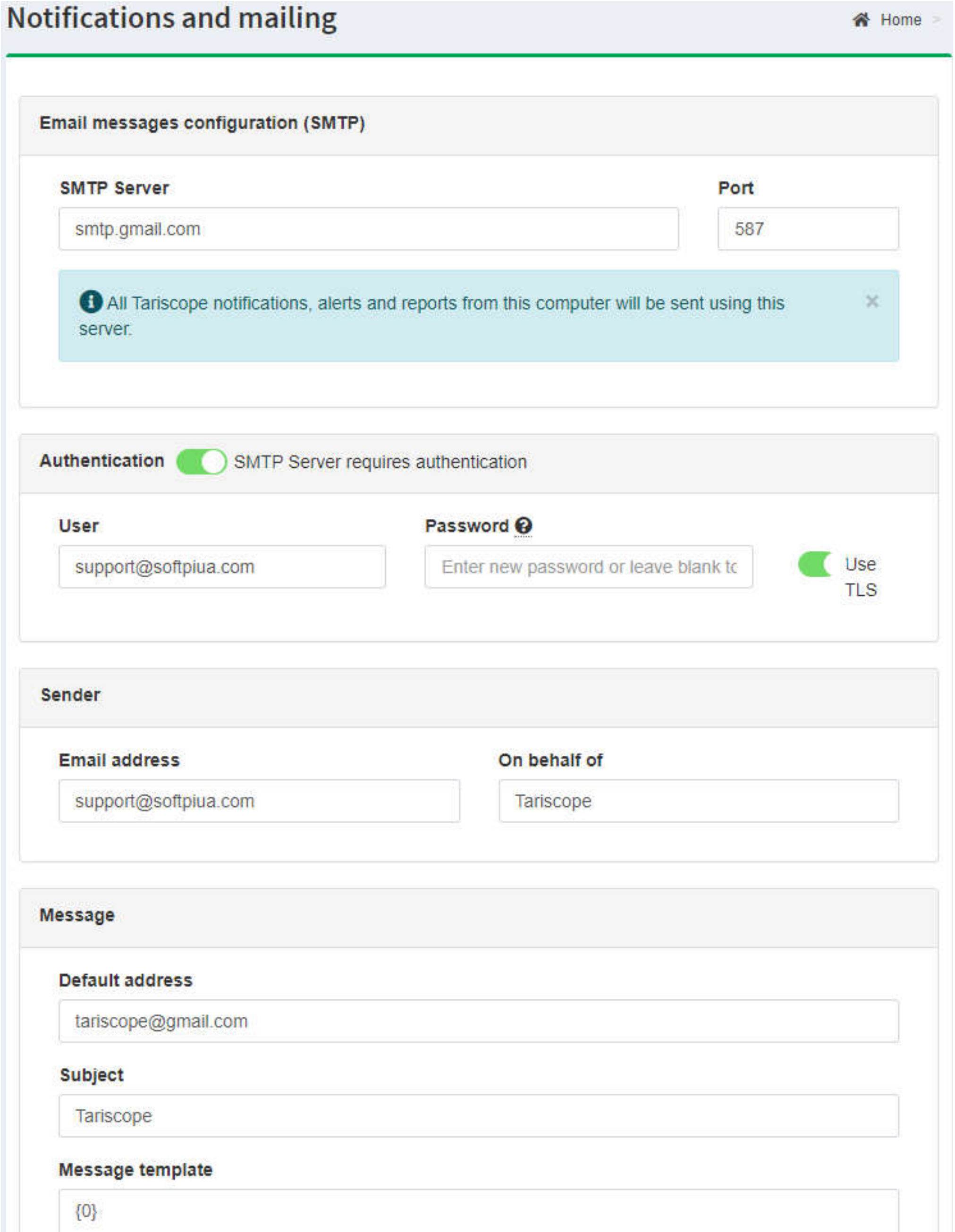


Figure 4.14.1

In the **User** box, enter your email address.

In the Password box, enter your password.

If your SMTP server uses the Transport Layer Security protocol, switch on the **Use TLS** switch.

In the **Sender** section, in the **Email address** box, type an email address from which sending will be executed.

In the **On behalf of** box, type a name which will be used to sending.

In the **Message** section, in the **Default address** box, type an email address on which will be sent notifications by default. For example, it may be the email address of the Tariscope administrator.

In the **Subject** box, type a subject of message. By default, it is used: ***Tariscope***.

In the **Message template** box, type a message text that will be displayed at the beginning of the message body. For example, it may be the following: "Notification on the events in Tariscope" or another.

To keep settings, click on **Save** button.

To check settings, click on the **Send test mail** button. If you correctly set parameters, you will get the message that is shown in Figure 4.14.2.

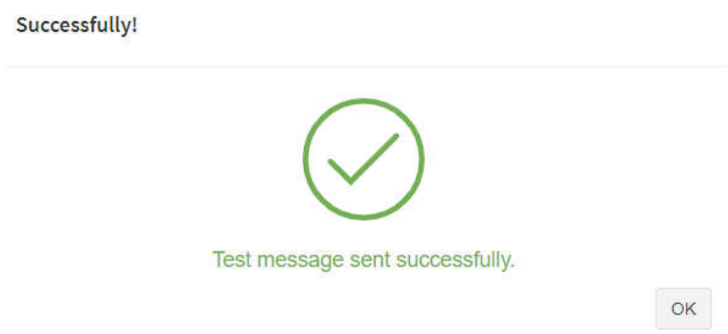


Figure 4.14.2

Otherwise, you will get the message about an error. In that case, click on the **Open service log** button. The **Service log** page is opened. Analyze the log and fix the errors in the settings.

4.15. Call export and Hotel systems

Tariscope can provide information about guests' calls to the hotel system. If you wish to use Tariscope together with a hotel system or export the call information to another system, in the Tariscope menu, select **Additional options** → **Integrations** → **Hotel systems**. The **Hotel systems** page appears as shown in Figure 4.15.1.

Click on the **Open settings** button. The **Hotel systems** page will be as shown in Figure 4.15.2.

In the **External system connection type** list, select the desired option. There are the following options of the connection:

- **Rlogin client**. Information from Tariscope is sent to an external system using Rlogin client.
- **Serial port**. Tariscope is connected to the hotel system through a serial port.
- **SSH client**. Tariscope is connected to the hotel system using SSH protocol.
- **TCP/IP client**. Tariscope is connected to TCP/IP server of the hotel system.
- **TCP/IP server**. Tariscope works as TCP/IP server, to which the hotel system is connected using TCP/IP client.
- **Asterisk AMI.** Tariscope uses the Asterisk Manager Interface to interact with Asterisk.

Click on the **Configure** button to setup the connection parameters. The **Settings** window appears which is specific for each connection type.

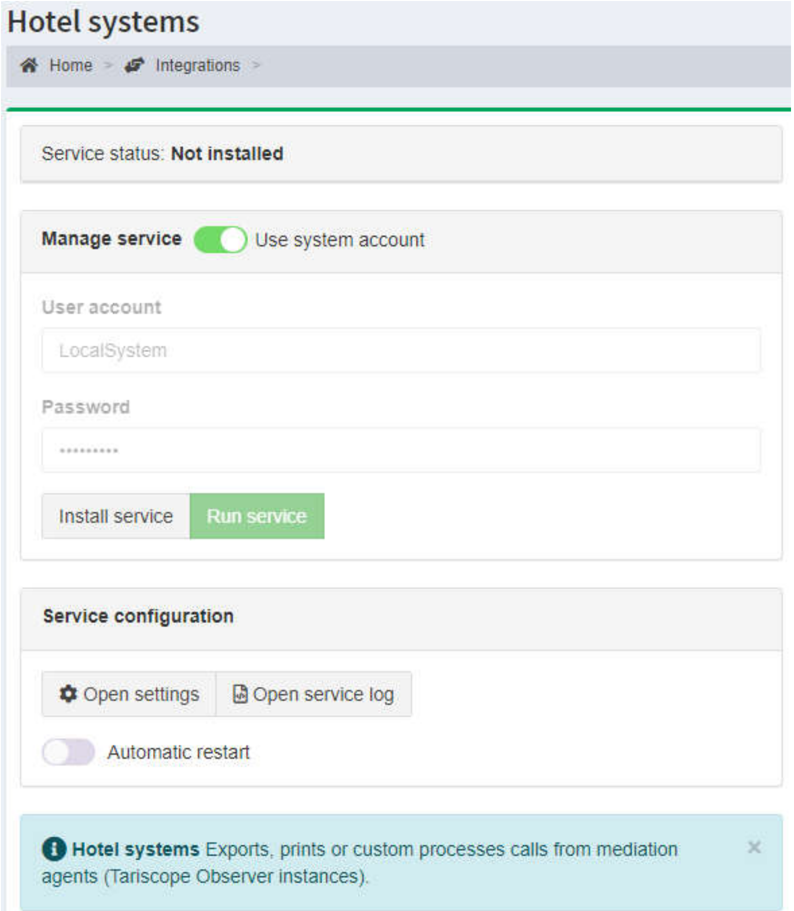


Figure 4.15.1

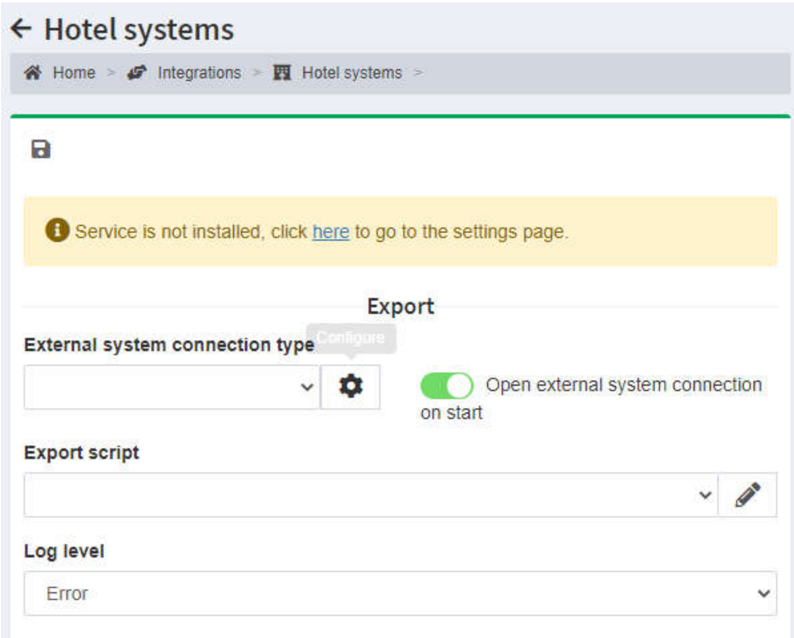


Figure 4.15.2

The configuration of any type of connection is the same as described in section for the Tariscope Observer configuration. Execute settings in the window and click **Save**.

If you need the Call export service is connected to the hotel system at once on the service start, turn on the **Open external system connection on start** switch. By default, the switch is on. If the switch is off, the time of connection will be defined with the script.

Tariscope can interact with any hotel system if you know the interaction protocol with the system. The implementation of this protocol is executed in the script, written in the language of VB Script or C# (Microsoft). Tariscope contains several predefined scripts:

- **hotel-uni-reference5.vb**,
- **print.vb**,
- **savefile.vb**.

These scripts are located in the folder: **...\Program Files (x86)\SoftPI\Tariscope\CallExport\CallExport**

The **hotel-uni-reference5.vb** script is intended to interact with a hotel system using UNI interface. This interface can be used to interaction with the following hotel systems: Opera, Fidelio v.8 (Micros), epitome PMS (Libra Hospitality) and others.

The **print.vb** script allows to print calls information on a local or remote printer.

The **savefile.vb** script saves calls data in a file.

Select the desired script in the **Export script** list. If you want to change the selected script, click on the **Edit** button. The **Edit** window appears. Change the script and close the window.

If these are no scripts that suit for your hotel system, you can develop the script yourself or contact the technical support of SoftPI.

Select one of the following levels of logging of the service, where every next option increases the level of details:

- **Status**,
- **Critical error**,
- **Error**,
- **Warning**,
- **Information**,
- **Advice**,
- **Debug**.

The log is needed to identify the causes of malfunction of the Call export service. If you using the log have not identified the cause of incorrect operation of the service and resolve this problem, send the log to the technical support service of SoftPI. The log file is in the folder: **...\ProgramData\Tariscope** and has a name: **callexport.log**

To save settings, click on the **Save** icon on the toolbar.

Return on the **Hotel systems** page shown in Figure 4.15.1.

To install the service, click on the **Install service** button. In the **Service status** position the value of "Stopped" is displayed. The **Install service** button is replaced to the **Uninstall service** button and the **Run service** button is active.

To start the service, click on the **Run service** button. In the **Service status** position the value of "Running" is displayed. The **Run service** button is replaced to the **Stop service** button. The **Uninstall service** button is inactive.

After the service was started, we recommend clicking on the **Open service log** button or select the **Service log** item of the menu and make sure there are no errors. If the log contains errors, stop the service, return to the settings, and validate the settings and script. After that, try to start the service.

To stop the service, click on the **Stop service** button. The **Stop service** button is replaced to the **Run service** button, and the **Uninstall service** button is active. The **Service status** position displays "Stopped".

To uninstall the service, click on the **Uninstall service** button.

4.16. Tariscope Tasks configuration

The Tariscope Tasks is a Windows service which is intended to automatically execute the following tasks by schedule:

- Report generation.
- Synchronization of subscribers' data with Active Directory.
- Receiving of the currency rates.
- Full backup of the Tariscope database.
- Differential backup of the Tariscope database.
- Charging of periodic services.
- Archiving of the calls data.
- Execution of a program.
- Sending newsletter.
- Performing a group of tasks.

To configure Tariscope tasks, control their status, select **Tariscope Tasks** → **Tasks list**. An example of the **Task list** is shown in Figure 4.16.1.

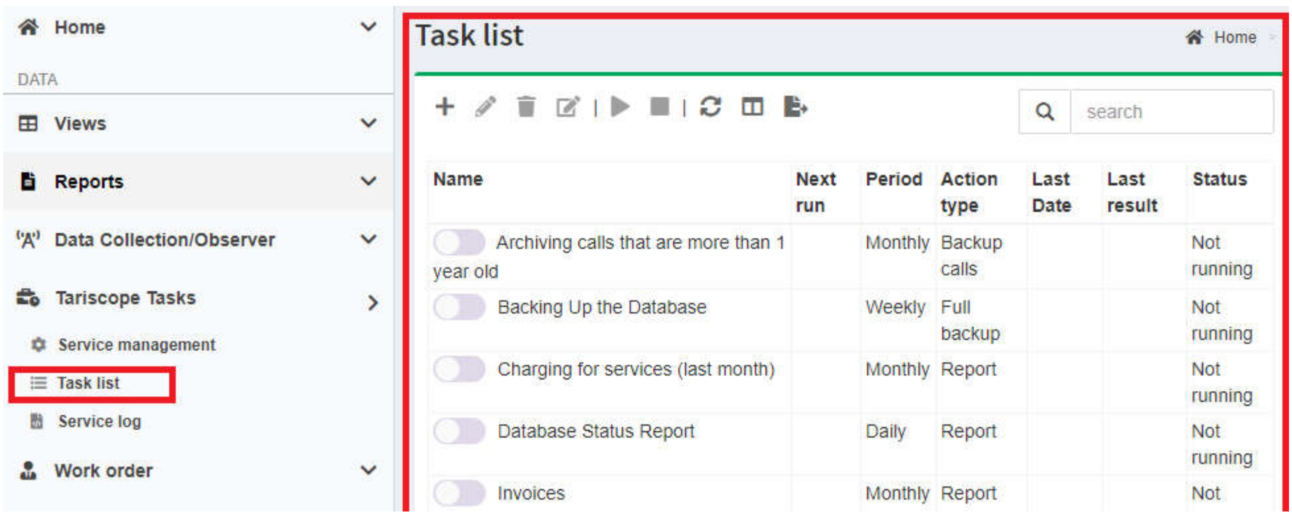


Figure 4.16.1

To create a new task, click on the **Add** icon on the toolbar. An example of the **New task** page appears as shown in Figure 4.16.2. The page looks different depending on the selected task type.

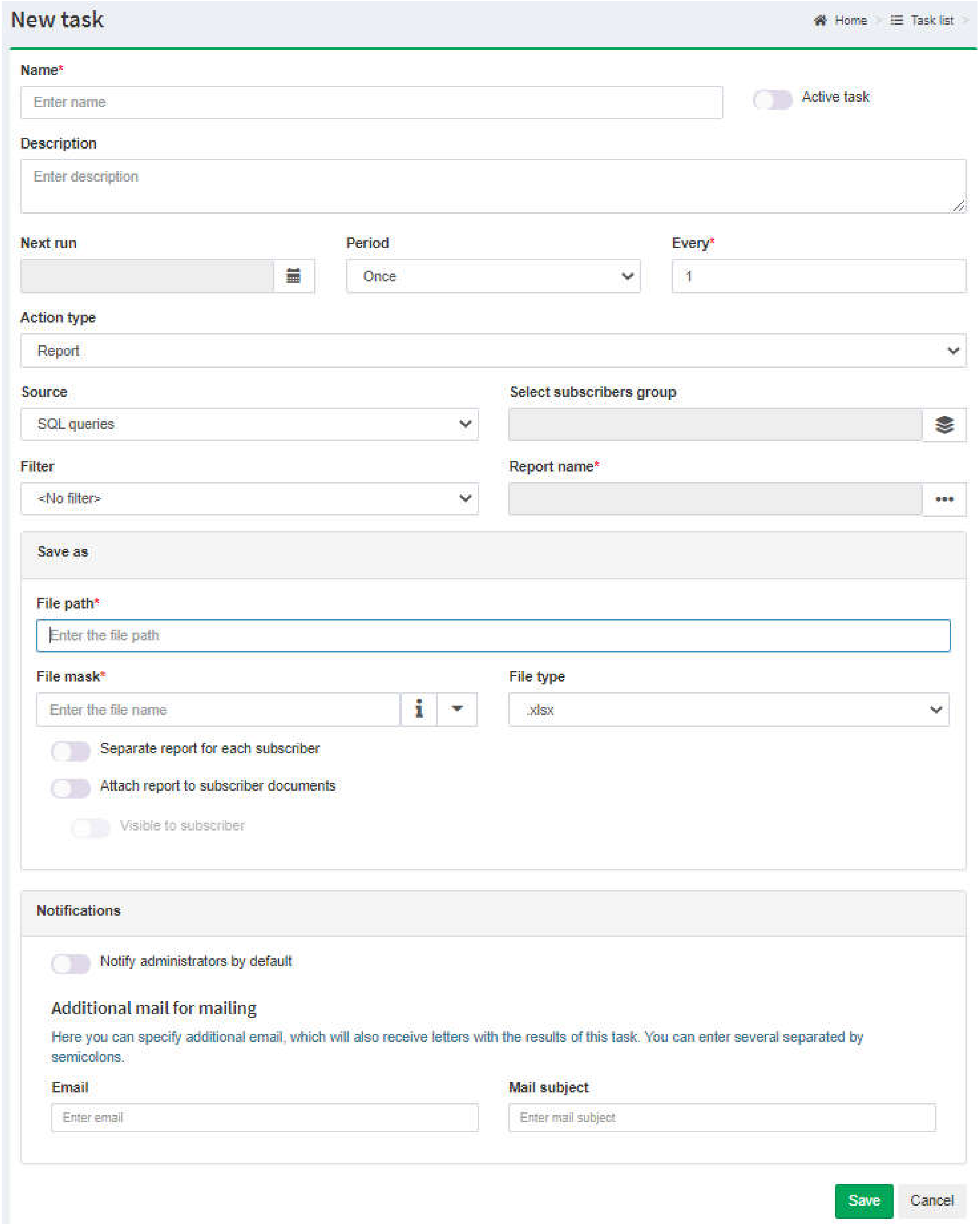


Figure 4.16.2

In the **Name** box, type the task name. This name is displayed in the task table (Figure 4.16.1) and it allows to identify the purpose of a specific task.

If necessary, in the **Description** box, type a description of the task. This can be especially useful when tasks are created by several persons.

For task execution in the specific time and date, turn on the **Active task** switch.

In the **Next run** calendar box, select the date and time of the initial start of the task.

In the **Period** list, select a period of the task execution. There are the following options:

- **Once**. The task will be performed only once at the time specified in the **Next run** calendar box, and then it becomes inactive. If necessary to execute this task once more, you need to define a new date and time of task execution and turn the **Active task** switch.
- **Every minute**. The task will be executed at intervals of several minutes specified in the **Every** box.
- **Every hour**. The task will be executed at intervals of several hours specified in the **Every** box.
- **Daily**. The task will be executed at intervals of several days specified in the **Every** box.
- **Weekly**. The task will be executed at intervals of several weeks specified in the **Every** box.
- **Monthly**. The task will be executed at intervals of several months specified in the **Every** box.
- **Annual**. The task will be executed at intervals of several years specified in the **Every** box.
- **On service start**. The task will be executed once, immediately after the service start.

The Tariscope Tasks service starts, regardless of the value of the **Next run** box of any task.

In the **Action type** list, select the required type of task. There are the following options:

- **Report**. One from the reports, which Tariscope contains or the Tariscope administrator was created, is generated. Or a procedure is performed for working with the Tariscope database.
- **Full backup**. The full backup of the Tariscope database is executed.
- **Differential backup**. This task creates the backup only a part of the Tariscope database which was changed from the last backup. This option requires less time and computer resources to perform than a full backup. But in the case of the database restore, you should restore each the first full backup and each subsequent differential backups.
- **Backup calls**. The archiving of the call database is executed, and the appropriated call records are deleted from the database.
- **Currency update**. The automatic receiving of the required currency rates is executed.
- **Synchronize subscribers from Active Directory**. Synchronization of subscribers' database with Active Directory of your enterprise is performed. Previously you should create a profile for synchronization with Active Directory.
- **Charge periodic services**. The service costs are charged for subscribers. The task is used only for the Tariscope Provider edition.
- **Execute program**. The specific program is started.

The rest of the page looks different depending on the selected task type.

If you have selected the **Report** option, the rest of the page looks like in Figure 4.16.2. Let us consider the settings of the report task.

In the **Source** list, select the source of subscriber filter that will be applied to generate the report. There are the following options:

- **SQL queries**. Subscribers for the report are selected using the SQL query. To set the SQL query, click on the **Select subscribers group** button. The **Edit** window appears, where you should type the desired SQL query.
- **Subscriber**. To select subscribers, click on the **Select** button next to the **Select subscribers group** box. The **Subscribers** window appears, where you should select the desired subscribers and click **Select**.
- **Group**. To select groups, click on the **Select** button next to the **Select subscribers group** box. The **Groups** window appears, where you should select the desired groups and click **Select**.

If you do not use the subscriber filter, the report will include data on all subscribers. When you click on the **Select** button on the window to keep your choice. DNs of the selected subscribers will be displayed in the **Select subscribers group** box.

If for report generation you need to apply other data filtering conditions, select the desired filter in the **Filter** list. The list contains some installed filters and those which you created in the views for calls. After you have selected the filter, the **Edit filter** button appears. If you want to change the filtering conditions, click on the button. The **Edit** window appears, where you can do changes. Click on the **Save** button to keep the changes.

Click on the "…" button located near the **Report name** box. The **Choose the report** window appears as shown in Figure 4.16.3.

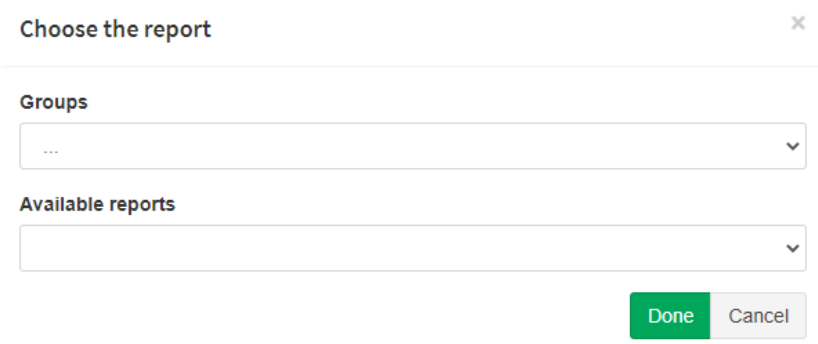


Figure 4.16.3

In the **Group** list, select the desired report group.

In the **Available reports** list, select the desired report. Separate report forms require setting values for variables. In this case, specify the values for variables and click on the **Done** button. The report name is displayed in the **Report name** box.

The **Save as** section includes settings which are applied for saving the report.

In the **File path** box, enter a path to the folder, where reports will be saved.

In the **File mask** list, type or select a file name template. The file name supports the following templates:

- **%d** – day.
- **%m** – month.
- **%y** – year.

- **%h** – hour.
- **%M** – minute.
- **%s** – second.
- **%a** – ID of subscriber.
- **%e** – main telephone number or IP address.
- **%n** – subscriber name.

For example, if you use the following name template: **report-% y-% m**, that reports will be generated in files with names such as: ***report-2020-05***, ***report-2020-06*** and so on. The **File mask** list contains also other samples of file names that the Tariscope administrator can change at will.

In the **File type** list, select a file type in which the report will be saved. The following file types are supported:

- **xlsx**,
- **xls**,
- **xml**,
- **mdb**,
- **csv**,
- **txt**,
- **htm**,
- **html**,
- **pdf**,
- **print**. The **print** file type means that the file will be automatically sent on a printer.

If you wish to generate the report for each subscriber, turn on the **Separate report for every subscriber** switch. If you turned on the switch and want to attach the report to subscriber's document, turn on the **Attach report to subscriber documents** switch.

If you did not turn on the **Separate report for every subscriber** switch, you can attach the report to a subscriber. In this case, click on the **Select subscriber** button and in the appeared window, select the desired subscriber.

The saved report will be accessible for Tariscope users who have access to the **Subscribers** page.

You can also allow the subscriber to access this report. To do this, turn on the **Visible to subscriber** switch. The report will be accessible for subscribers through Tariscope Personal Area.

The **Notifications** section allows you to configure the sending parameters.

If you turned on the **Separate report for every subscriber** switch and you want to send the report each subscriber, turn on the **Notify subscribers and send them reports** switch. For execution of this feature, subscriber's parameters must contain its email address.

If you did not turn on the **Separate report for every subscriber** switch and you turn on the **Notify administrator by default** switch, the Tariscope administrator will receive email notification about the report generation.

Also, you can specify additional email addresses where letters with the results of this task will be sent. To do this, enter email addresses in the **Email** box. To enter several addresses, use semicolons.

In the **Mail subject** box, specify the subject for this sending.

Click **Save** to keep settings.

To create the task for the full backup, select the **Full backup** item in the **Action type** list. Then, specify data in the **Save as** and **Notifications** sections.

To create the task for the differential backup, select the **Differential backup** item in the **Action type** list. Then, specify data in the **Save as** and **Notifications** sections.

To create the task for calls backup, select the **Backup calls** item in the **Action type** list. In the **Filter** list, select the filter that will choose the required calls. Then, specify data in the **Save as** and **Notifications** sections.

If you want to create a task to get the currency rates, select the **Current update** item in the **Action type** list. The **Profile** list appears which contains the following profiles:

- **National Bank of Ukraine**. This option allows you to receive the currency rate provided by the National Bank of Ukraine. Currently, only US dollar and euro rates are being synchronized.
- **GE-NBG**. The profile is used to receive the currency rates from the site of National Bank of Georgia.
- **KZ-NB**. The profile is used to receive the currency rates from the site of National Bank of the Republic of Kazakhstan.
- **RU-CBR**. The profile is used to receive the currency rates from the site of Central Bank of the Russian Federation.
- **UA-NBU**. The profile is used to receive the currency rates from the site of National Bank of Ukraine.
- **UA-PIB**. The profile is used to receive the currency rates from the site of Prominvestbank (Ukraine).

These profiles are stored in the folder: …**\Program Files (x86)\SoftPI\Tariscope\JobsService\CurrencyProfile**. They have a structure of the XML file. The administrator can edit any of the profiles or create your own.

In the profile file, you can create or change the following settings:

- The name and settings of the proxy server.
- The Web page, where it is necessary to obtain information on currency rates.
- A list of required currencies and parameters of search of a currency rate.

Also, you can change a profile data by clicking on the **Edit** button located on the right of the **Profile name** box. An example of part of the **New task** page is shown in Figure 4.16.4.

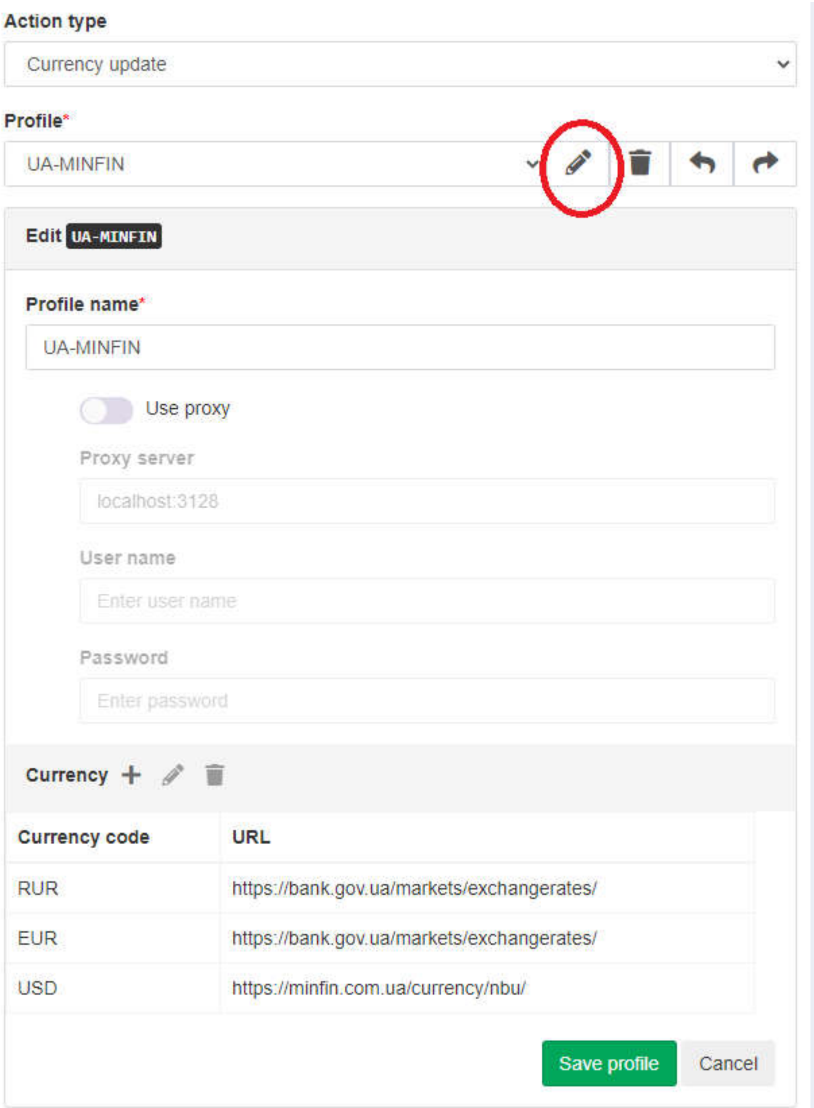


Figure 4.16.4

Since the information to update the currency rates is taken from the external site, the computer, where **Tariscope Tasks** will run, must have access to the relevant site. If your network uses a proxy server, you must specify its parameters. Turn on the **Use proxy** switch and, type values in the **Proxy server**, **User name**, and **Password** boxes.

To add a new currency and site that contains currency rates, click on the **Add** icon. The **Add currency** window appears as shown in Figure 4.16.5.

Type values in the boxes of the window. An example of such an input is shown below:

Currency code: **USD**
Decimal delimiter: **.**
Factor: **0.01**
URL: **http://www.bank.gov.ua/control/uk/curmetal/detail/currency?period=daily**
Start key #1: **<td class="cell">United State Dollar</td>**
Start key #2: **<td class="cell_c">**
Regular expression:
End key: **</td>**

Click **Done** to save settings.

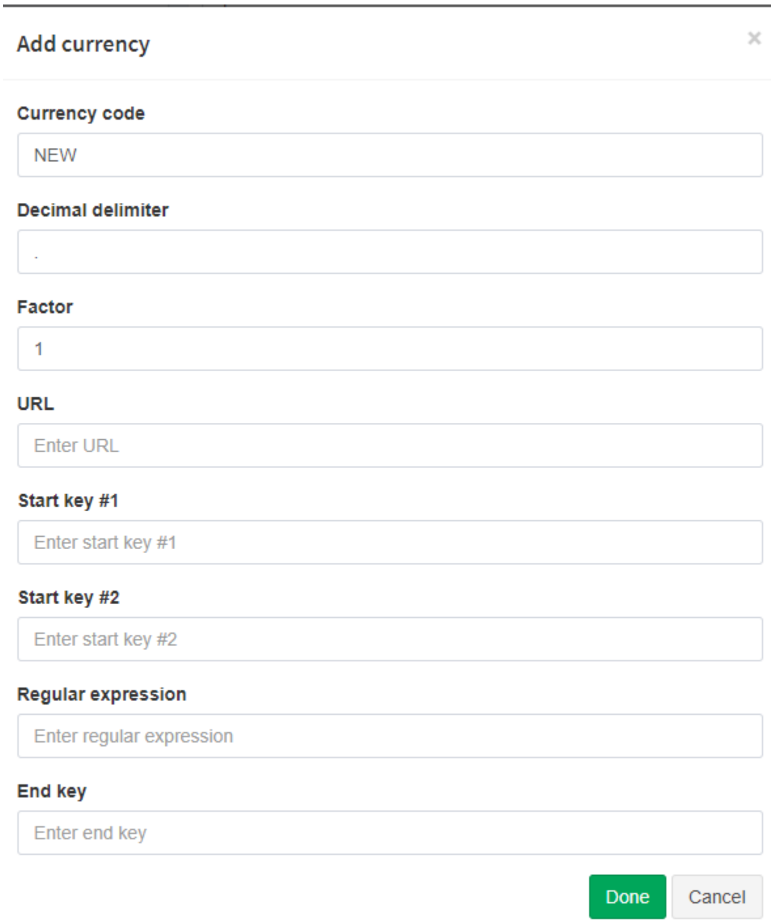


Figure 4.16.5

On the **New task** page, specify data in the **Notifications** section and click on the **Save profile** button.

If you need to create a task that will synchronize subscribers from Active Directory, select the appropriate option in the **Active type** list. The **AD Profile** list appears. Select the desired profile in the list. If the list does not contain the desired profile, move to **Additional options** → **Integrations** → **Active Directory** and create the required profile.

On the **New task** page, specify data in the **Notifications** section and click on the **Save** button to keep settings.

If you are a telecom provider and you want to automatically charge periodic services, you should select the **Charge periodic services** option in the **Active type** list. You can create the task that will be applied for specific group of subscribers (customers). To do this, use the **Source** list and the **Select subscribers group** button, as this is described for case of the report generation above.

If you need to execute a program by schedule, select the **Execute program** option in the **Active type** list. The **Path to the file** and **Arguments** boxes appear. In the **Path to the file** box, enter the path to the program. If the program requires some parameters, enter them in the **Arguments** box. Specify data in the **Notifications** section and click on the **Save** button to keep settings.

If you need to execute some tasks simultaneously or in the specific order, select the **Group of tasks** option in the **Action type** list. The additional settings appear on the **New task** page as shown in Figure 4.16.6.

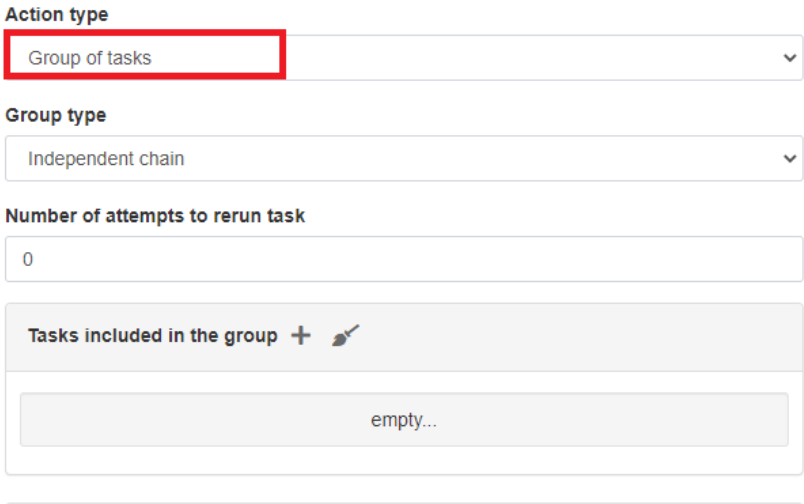


Figure 4.16.6

There are different group types which are listed in the **Group type** list:

- **Independent chain**. Each task in the group will be launched without analyzing the result of completing the previous task in the group.
- **Dependent chain**. Each task in the group will be launched only if the previous task was successfully completed.
- **Independent chain with feedback**. Starting tasks in a group is like the **Independent chain** option, but if any task was unsuccessful, an attempt will be made to execute it again. The number of attempts to complete tasks is configurable. If all attempts are exhausted, but the task was never completed successfully, then the next task in the list will still be launched.
- **Dependent chain with feedback**. This group is like the **Dependent chain** option, but if execution attempts are exhausted and the task was not completed successfully, then the next task in the list will not be executed. The execution chain stops.
- **Run all together**. All tasks of the group will be launched simultaneously in different threads, without a queue for their execution.

Select the desired option.

In the **Number of attempts to rerun task** box, specify how many times the task can be retried if the previous attempt was unsuccessful.

Click on the **Add** button near the **Tasks included in the group** label and add the desired tasks. You should create the desired task in advance.

Specify data in the **Notifications** section and click on the **Save** button to keep settings.

If you need to send a message to subscribers (customer), you should select the **Newsletter** option in the **Action type** list. In this case the **New task** page will have some specific positions which are shown in Figure 4.16.7.

You can choose the desired group of subscribers for which the mailing will be executed. There are options to do this. Yu can specify the required SQL query, select subscribers from the list, or select the desired group of subscribers. Choose the desired option in the **Source** list.

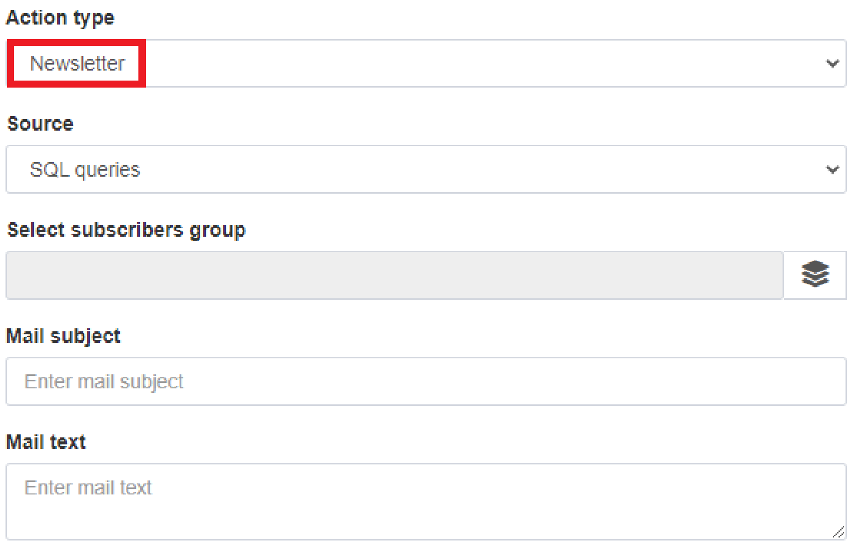


Figure 4.16.7

The rest of the steps are like those described for the task of generating a report.

In the **Mail subject** box, type a subject.

In the **Mail text** box, type a text. The box allows you to use HTML.

Specify data in the **Notifications** section and click on the **Save** button to keep settings.

To install, start, stop or uninstall the Tariscope Tasks services, select in the Tariscope menu: **Tariscope Tasks → Service management**. The Tariscope Tasks page is displayed as shown in Figure 4.16.8.

By default, the service runs the user account of ***LocalSystem***. To change the account, turn off the **Manage service** switch and specify **User account** and **Password**.

To install the service, click on the **Install service** button. In the **Service status** position the value of "Stopped" is displayed. The **Install service** button is replaced to the **Uninstall service** button and the **Run service** button is active.

To start the service, click on the **Run service** button. In the **Service status** position the value of "Running" is displayed. The **Run service** button is replaced to the **Stop service** button. The **Uninstall service** button is inactive.

After the service was started, we recommend clicking on the **Open service log** button or select the **Service log** item of the menu and make sure there are no errors. If the log contains errors, stop the service, return to the settings. After that, try to start the service.

To stop the service, click on the **Stop service** button. The **Stop service** button is replaced to the **Run service** button, and the **Uninstall service** button is active. The **Service status** position displays "Stopped".

To uninstall the service, click on the **Uninstall service** button.

In some cases, the service may be stopped by Windows. If you wish, the service is automatically started in these cases, turn on the **Automatic restart** switch.

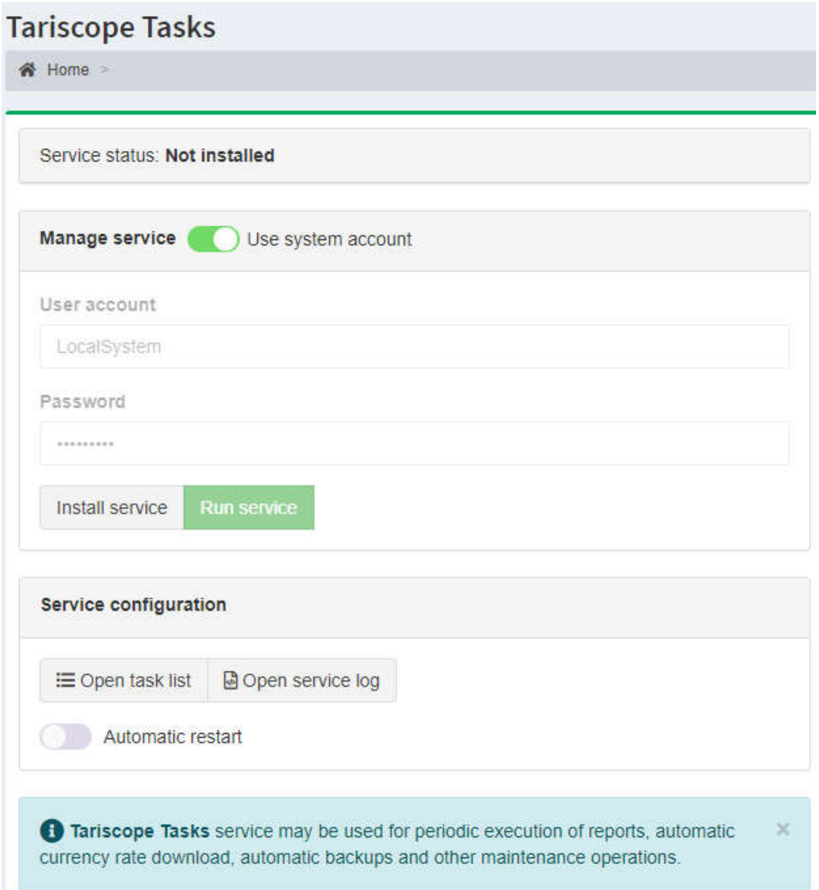


Figure 4.16.8

4.17. NetFlow / IPFIX / rFlow collector

The NetFlow / IPFIX / rFlow collector (hereinafter "Collector") is intended for collection of information about IP traffic from the data transfer devices that use the following protocols: NetFlow v.5 or v.9, IPFIX, rFlow. The Collector processes only data that can be used for billing purposes.

To configure the Collector, in the Tariscope menu, select **Additional options** → **Integrations**. The **Integrations** page appears as shown in Figure 4.17.1.

Click on the **NetFlow/IPFIX/rFlow Collector** button. The **NetFlow/IPFIX/rFlow Collector** page appears as shown in Figure 4.17.2.

You should configure the Collector. To do this, click on the **Open settings** button. The **NetFlow/IPFIX/rFlow Collector** page will be as shown in Figure 4.17.3.

In the **Data collection and primary processing** section of the page, you can set parameters that affect the amount of data in the Tariscope database and log files.

In the **Listen ports** box, type a TCP/IP port number through which the Collector will get the IP traffic data. By default: 2055. The same TCP/IP port number should be set in the data transmission device. If you want to use more than one port, enter their numbers separated by commas.

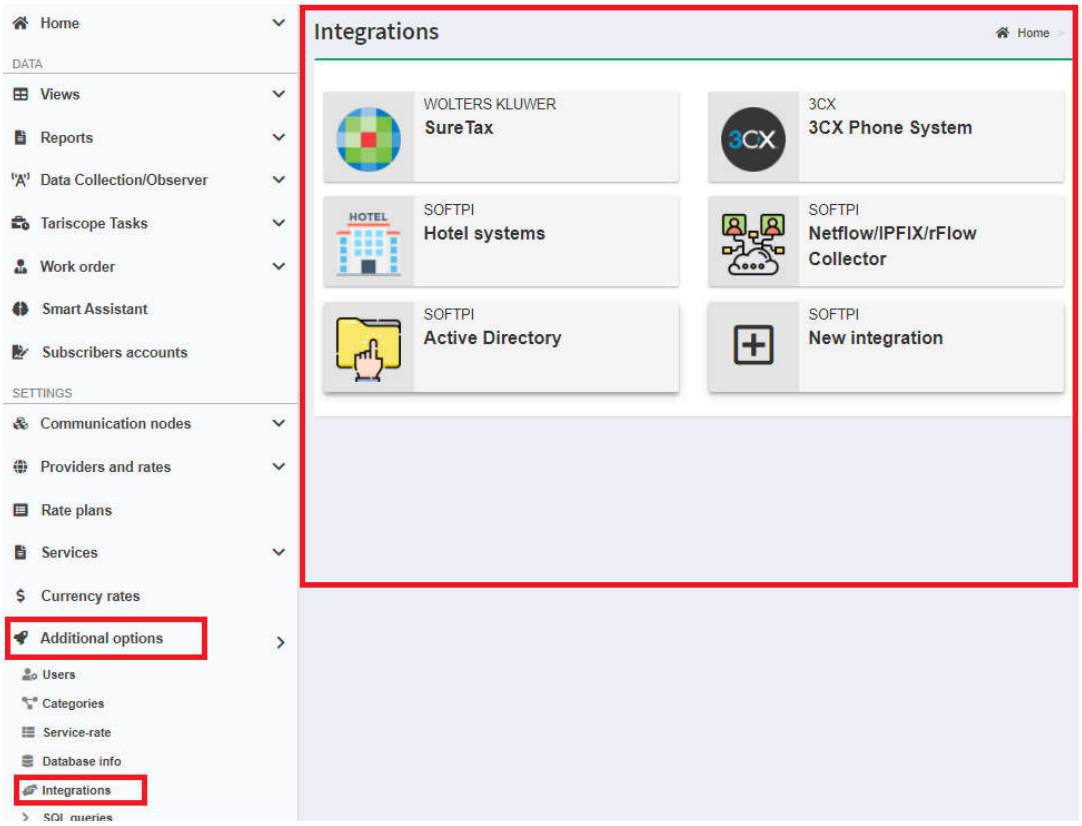


Figure 4.17.1

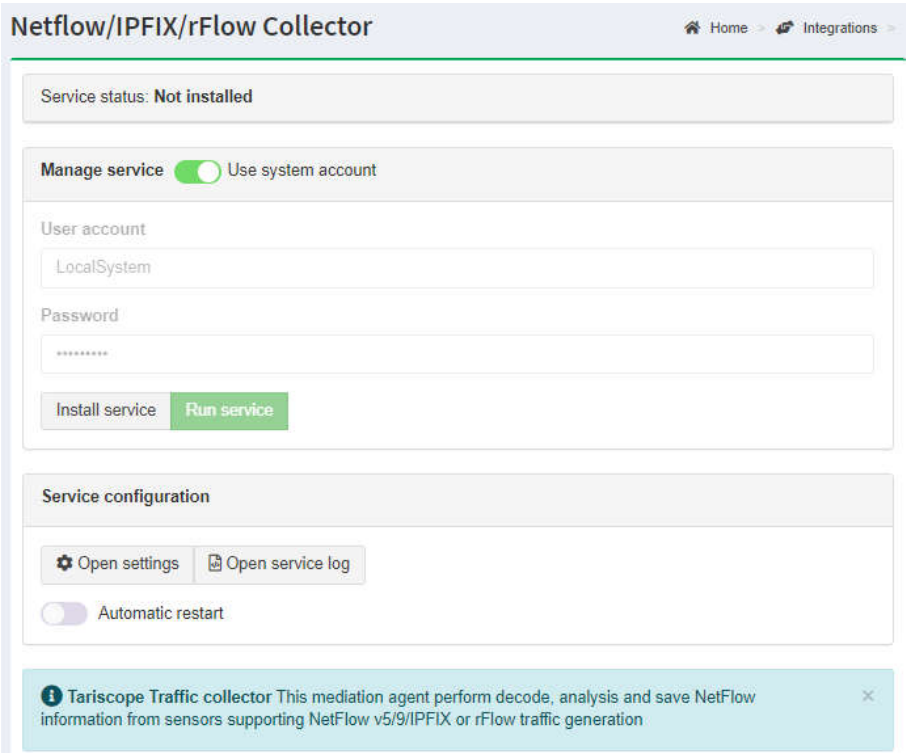


Figure 4.17.2

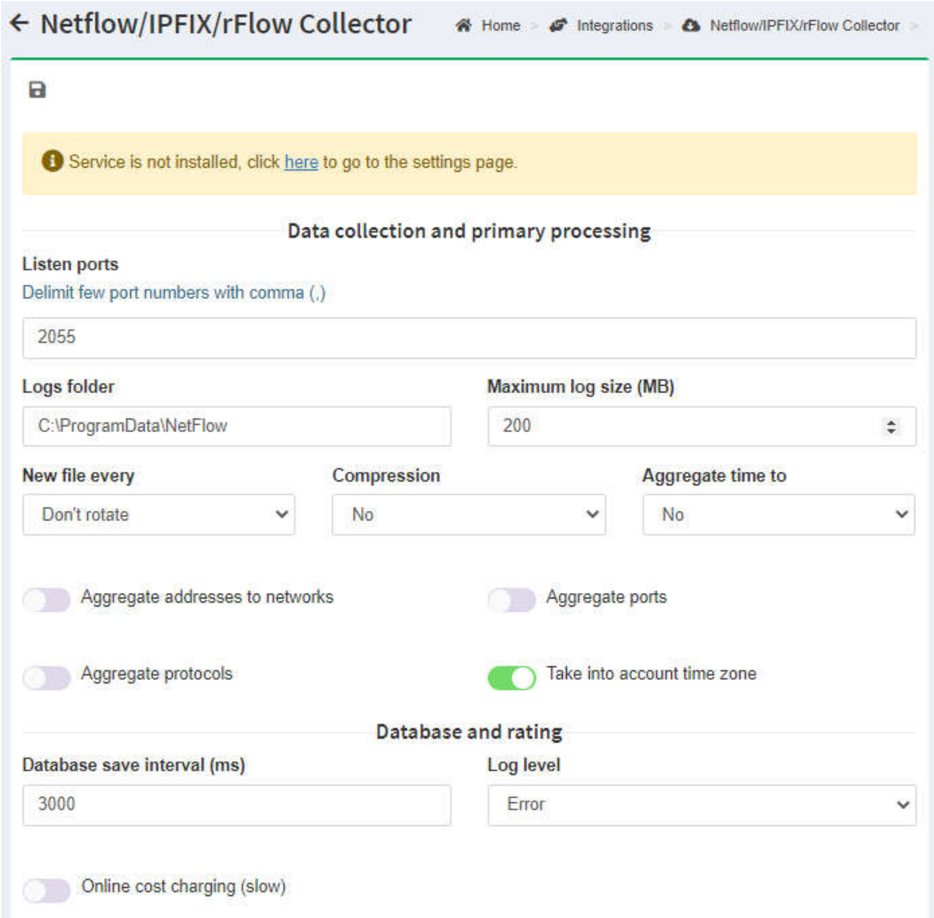


Figure 4.17.3

The Collector, except processing the incoming data stream and writing it to the Tariscope database, backs up the data stream into a binary file in the format in which it received data.

In the **Log folder** box, specify a path to folder where logs will be stored.

In the **New file every** list, select the required period to create a new log. There are the following options:

- **Don't rotate**. The data will be permanently stored in the single file if its size does not exceed the value specified in the **Maximum log size** box.
- **Hour**. A new log file will be created every hour, if its size does not exceed the value specified in the **Maximum log size** box.
- **Day**. A new log file will be created every day, if its size does not exceed the value specified in the **Maximum log size** box.
- **Month**. A new log file will be created every month, if its size does not exceed the value specified in the **Maximum log size** box.

Another parameter that affects the period of the creation of a new log file is its size, which is set in the **Maximum log size** box. When the specified size is reached, the current log file is closed and a new one is created. Enter the desired value in the box. By default: 200 MB.

To reduce the size of the log file on disk, you can use its compression. To configure the compression, in the **Compression** list, select an option from the following ones:

- **No**. The compression is not used.
- **Zip**. The log file is compressed into the Zip archive.

- **Bzip**. The log file is compressed into the Bzip archive.
- **Zlib**. The log file is compressed into the Zlib archive.

The Collector may use a time zone, which is installed on a computer with Tariscope, during processing the received data. For this purpose, turn on the **Take into account time zone** switch.

To reduce the amount of the Tariscope database with information about network traffic if there is no need for full detail, specify the required level of a data aggregation.

Turn on the **Aggregate addresses to networks** switch. The data is grouped to the level of IP networks specified in the **Provider and rates** → a particular provider → **Outgoing** or **Incoming** → **IP networks**. Turning this switch reduces the load on SQL Server, and therefore improves performance of Tariscope.

You can specify the aggregation to the level of IP ports. To do this, turn on the **Aggregate ports** switch.

You can specify the aggregation to the level of IP protocols. To do this, turn on the **Aggregate protocols** switch.

You can specify the aggregation for a certain time period, which is set in the **Aggregate time to** list. The list contains the following options:

- **No**. The aggregation for the time period is not applied.
- **Second**. It is used to aggregate data obtained in one second.
- **Minute**. It is used to aggregate data obtained in one minute.
- **Ten minutes**. It is used to aggregate data obtained in ten minutes.
- **Hour**. It is used to aggregate data obtained in one hour.
- **Day**. It is used to aggregate data obtained in one day.

To store the processed data in the Tariscope database, you should configure parameters that are specified in the **Database and rating** section.

In the **Database save interval** box, type a time period through which the processed data will be recorded in the Tariscope database. The load on the server increases with a short time period. The default value is 3000 ms.

When there is a need for rating immediately after receiving traffic data, turn on the **Online cost charging** switch. If the switch is off, rating can be done at any convenient time.

The Collector can write a log with varying level of detail. The level of detail is determined by the value specified in the **Log level** list. There are the following options:

- **Status**,
- **Critical error**,
- **Error**,
- **Warning**,
- **Information**,
- **Advice**,
- **Debug**.

Status is the least detailed level, and **Debug** is the most detailed level of logging.

To save the configuration, click on the **Save** icon on the toolbar.

Start and stop of the Netflow/IPFIX/rFlow collector

To start the Collector service, go to the **NetFlow/IPFIX/rFlow Collector** (Figure 4.17.2).

By default, the service runs with the user account of ***LocalSystem***. To change the account, turn off the **Manage service** switch and specify **User account** and **Password**.

To install the service, click on the **Install service** button. In the **Service status** position the value of "Stopped" is displayed. The **Install service** button is replaced to the **Uninstall service** button and the **Run service** button is active.

To start the service, click on the **Run service** button. In the **Service status** position the value of "Running" is displayed. The **Run service** button is replaced to the **Stop service** button. The **Uninstall service** button is inactive.

After the service was started, we recommend clicking on the **Open service log** button or select the **Service log** item of the menu and make sure there are no errors. If the log contains errors, stop the service, return to the settings. After that, try to start the service.

To stop the service, click on the **Stop service** button. The **Stop service** button is replaced to the **Run service** button, and the **Uninstall service** button is active. The **Service status** position displays "Stopped".

To uninstall the service, click on the **Uninstall service** button.

4.18. User management

The User management system allows to create, edit, and delete user accounts in Tariscope. Tariscope users can have different access rights to Tariscope. It is possible to limit a user access to various telecommunication equipment, as well as to restrict the actions that a user can perform with the different subscriber groups.

To create a new user, select **Additional options → Users**. The **Users** page appears an example of which ss shown in Figure 4.18.1.

In the user table the following columns are displayed:

- **Name**. The column displays a username. On initial installation, there is only one user accounts: 'Administrator'.
- **Email**. The column displays a user login (email address) with which the user is connected to Tariscope.
- **User type**. The column displays a user type which was assigned to the user.

To add a new user, on the toolbar, click on the **Add** icon. The **New user** page appears as shown in Figure 4.18.2.

In the **Name** box, type a username. For example, it may be a name and surname of the user. The name can be used by the Tariscope administrator to identify the user. This is a required field.

In the **Email** box, enter user’s email address which is used as a login. This is a required field.

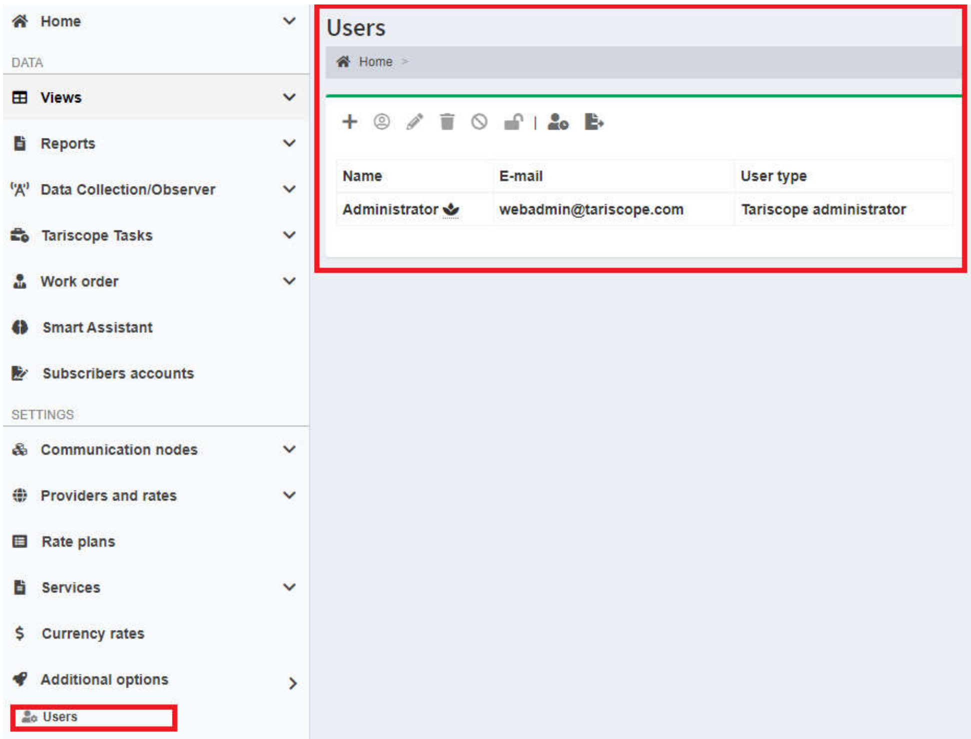


Figure 4.18.1

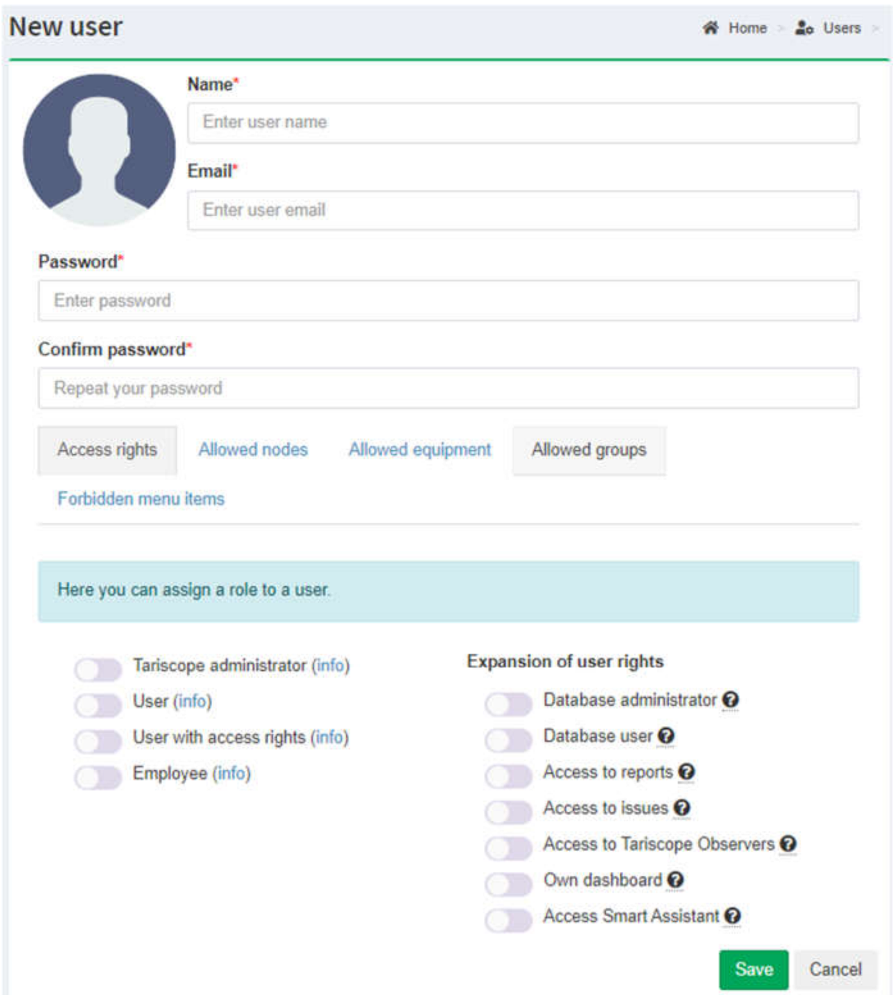


Figure 4.18.2

In the **Password** box, enter the first user's password. The user can change the password in the future. This is a required field.

Repeat the password in the **Confirm password** box. This is a required field.

To enable or disable access to various Tariscope functions, use the tabs on the page.

The **Access rights** tab allows you to select a user type and enable additional rights.

There are the following user types in Tariscope:

- **Tariscope administrator**. This user has all rights to Tariscope.
- **User with access rights**. The user has access to communication nodes and Subscriber accounts. The user can edit settings of the allowed PBXs. The user can edit the allowed subscriber groups. You can deny access to any menu item for this user. You can provide the rights to administer the Tariscope database. You can provide access to reports for this user. You can provide access to issues for this user. You can provide access to Tariscope Observer for this user. The user can have access to the dashboard.
- **User**. The user has read-only rights. The user does not have access to communication nodes. The user does not have access to the Subscriber accounts. You can deny access to any menu item for this user. You can provide the rights to administer the Tariscope database. You can provide access to reports for this user. You can provide access to issues for this user. You can provide access to Tariscope Observer for this user. The user can have access to the dashboard.
- **Employee**. This user can work only with work orders.

To select the desired user type, turn on the switch.

You can give the additional rights for **User with access rights** and **User** using switches from the **Expansion of user rights** section:

- **Database administrator**. Allows the user to manage the Tariscope database.
- **Database user**. Allows the user to have access to the database data.
- **Access to reports**.
- **Access to issues**.
- **Access to Tariscope Observers**.
- **Own dashboard**. Allows the user to use own dashboard.
- **Access to Smart Assistant**. Allows the user to have access to functions of Smart Assistance.

To enable or disable access to telecommunications nodes, click on the **Allowed nodes** tab. An example of the tab is shown in Figure 4.18.3.

To allow access to all telecommunications nodes, turn on the **Allow all nodes** switch.

To allow access to desired node, turn on the switch for the node.

To enable or disable access to specific telephone systems, click on the **Allowed equipment** tab. An example of the tab is shown in Figure 4.18.4.

To allow access to all telephone systems, turn on the **Allow all equipment** switch.

To allow access to desired telephone system, turn on the switch for the system.

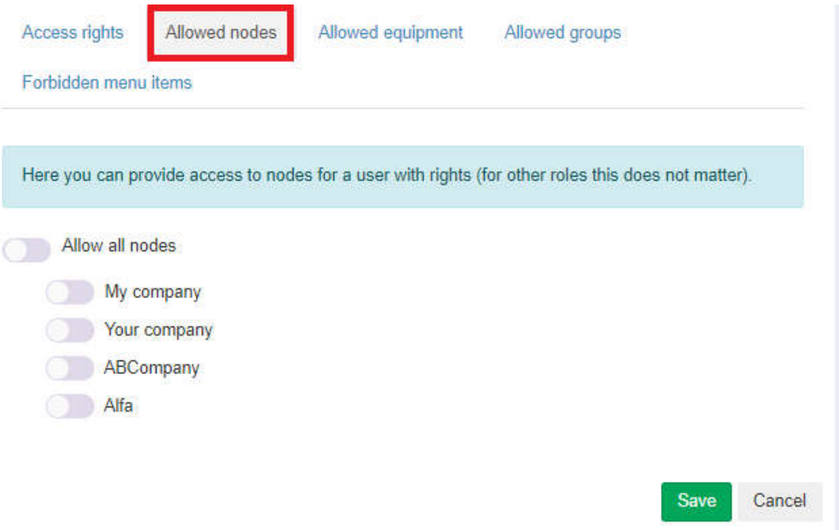


Figure 4.18.3

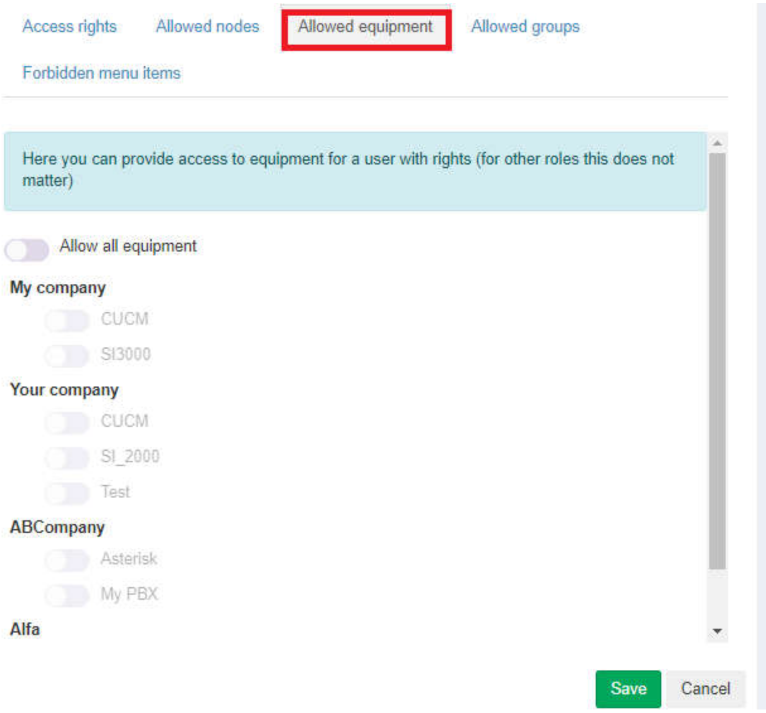


Figure 4.18.4

To enable or disable access to specific subscriber group, click on the **Allowed group** tab. An example of the tab is shown in Figure 4.18.5.

To allow access to all subscriber groups, turn on the **Allow all group** switch.

To allow access to desired subscriber group, turn on the switch for the group.

To enable or disable access to specific Tariscope menu item, click on the **Forbidden menu items** tab. An example of the tab is shown in Figure 4.18.6. To disable access to the specific menu item, turn in the switch near the item name.

To save settings, click on the **Save** button.

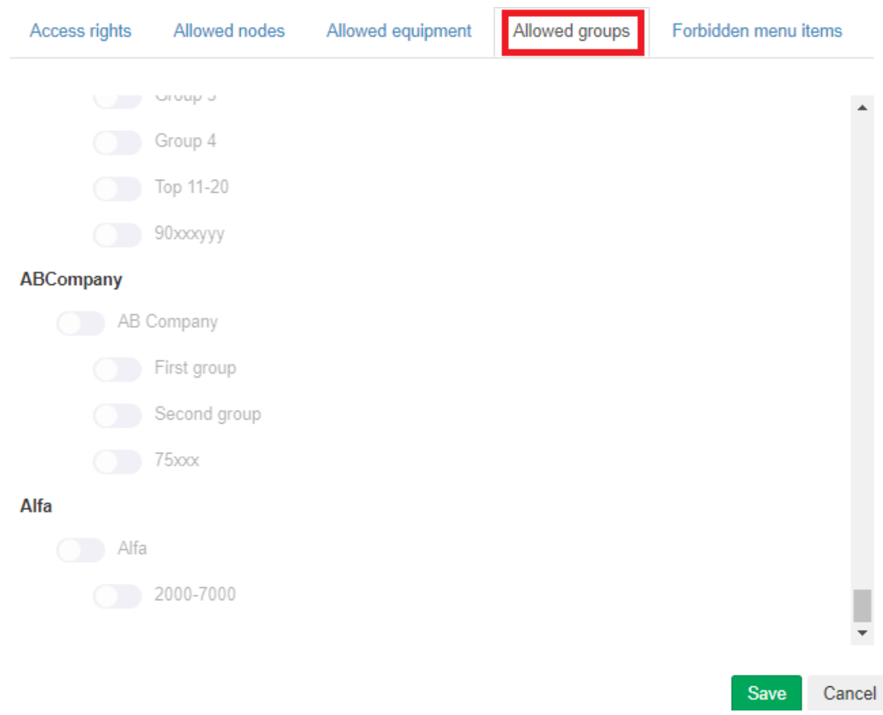


Figure 4.18.5

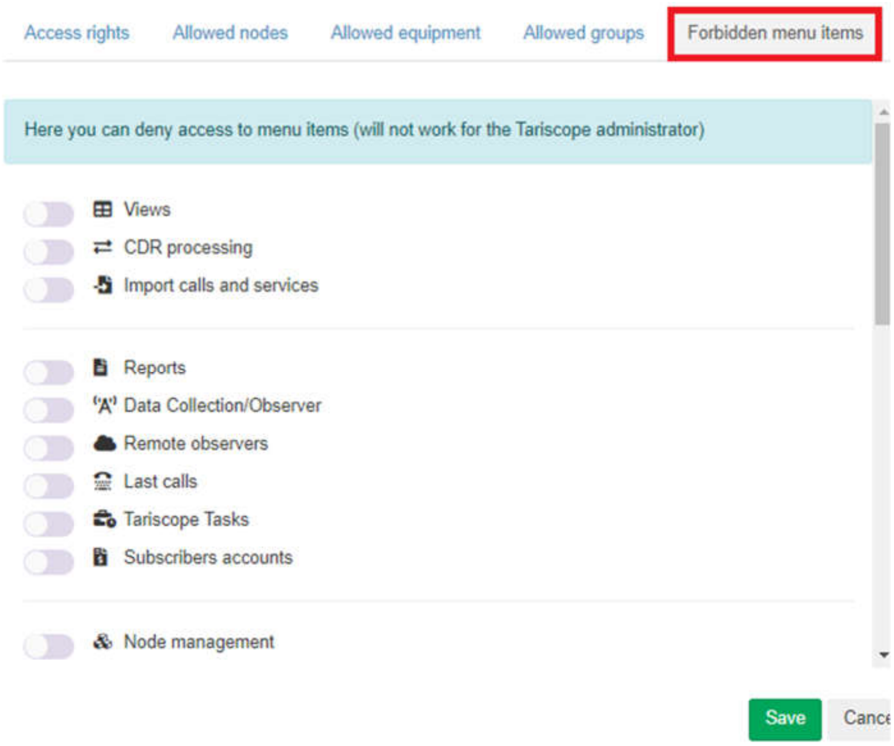


Figure 4.18.6

4.19. Tariscope Personal Area configuration

The Tariscope Personal Area (hereinafter Personal Area) allows customers (subscribers) to have a Web access to personal accounts, call information, network traffic information, etc.

How to install Personal Area, see in the Chapter 1.

The Tariscope administrator can set up parameters of the site which are general for all subscribers:

- an authentication method to login in Personal Area;
- a payment system which are used to pay for telecommunications services;
- which sections of the site may be available to subscribers;
- the site preferences;
- the rate plan settings;
- an ability to set categories for calls.

To configure Personal Area, start the site from the computer where Personal Area was set using URL: http://localhost:8081/webconfig

Instead of the 8081 port, use a port that was specified during the installation.

The page is displayed as shown in Figure 4.19.1.

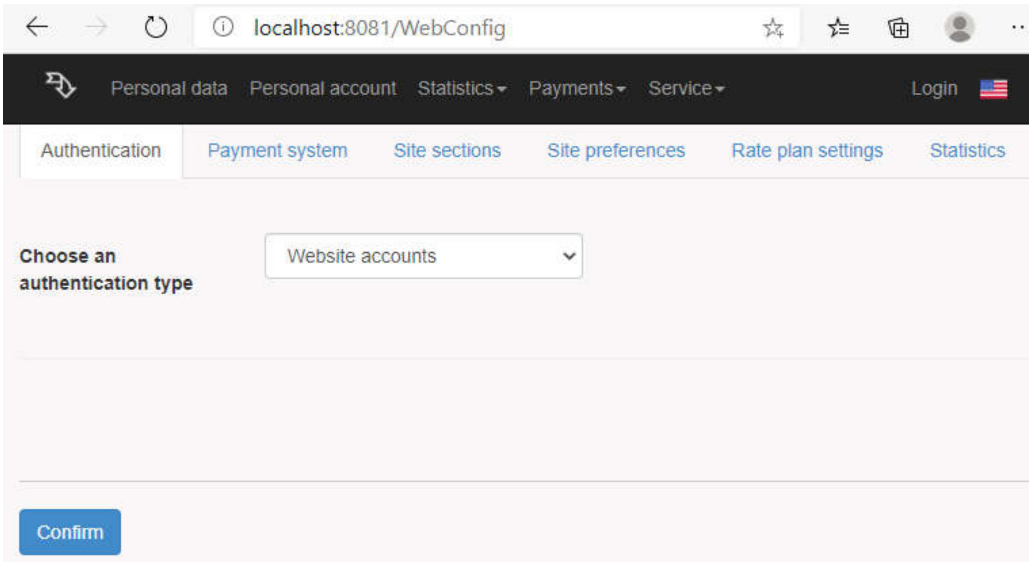


Figure 4.19.1

This page contains the following tabs:

- **Authentication**. The tab is used to select an authentication method for subscribers.
- **Payment system**. The tab is used to select the types of payment systems, which will be available to subscribers to perform payments for telecommunications services.
- **Site sections**. The tab is used to define available sections of the site to subscribers.
- **Site preference**. The tab is primarily used to enable subscribers edit their data in the Tariscope system.
- **Rate plan settings**. The tab allows you to enable or prohibit subscribers to change their rate plan.

- **Statistics**. The tab allows you to set a list of the call categories, which subscribers can set for calls.

Let us consider each configuration tab in the following sections.

4.19.1. Configuration of authentication methods

The configuration of the subscriber authentication method in Tariscope Personal Area is performed on the **Authentication** tab of the WebConfig page (Figure 4.19.1).

In the **Choose an authentication type** list, there are the following options:

- **Website accounts**. The subscriber email address and his password which were set in subscriber's data are used as authentication parameters. In the case this tab configuration is not required.
- **Active Directory accounts**. The parameters of Active Directory account are used to the Personal Area login. The configuration is described below.
- **Windows accounts**. The Windows account is used to the Personal Area login. The configuration is described below.

Active Directory accounts

In the **Choose an authentication page** list, select the **Active directory accounts** item.

The configuration page is shown in Figure 4.19.1.1.

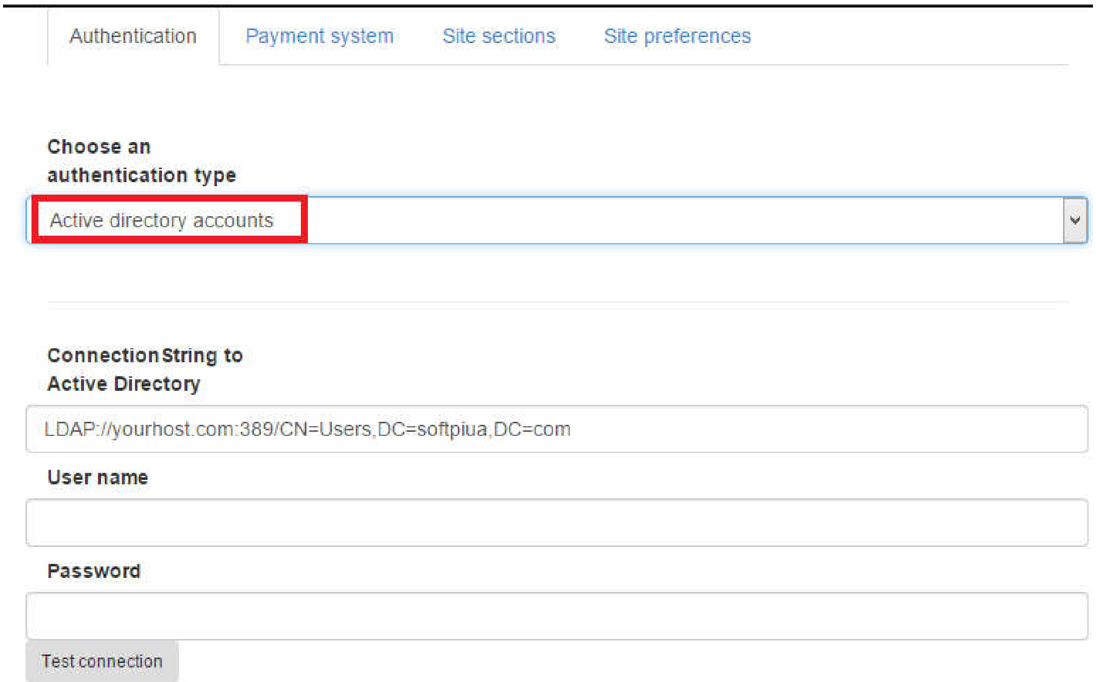


Figure 4.19.1.1

In the **Connection String to Active Directory** box, type a connection string to your Active directory.

In the **User name** box, type a username which has an access to subscribers' accounts.

In the **Password** box, type a password for the user.

Before you confirm the entered data, check the entered data for correctness by clicking **Test connection**.

If the test connection is successful, click on the **Confirm** button to save the data.

Windows accounts

In the **Choose an authentication type** list, select the **Windows accounts** item. The configuration window will be as shown in Figure 4.19.1.2.

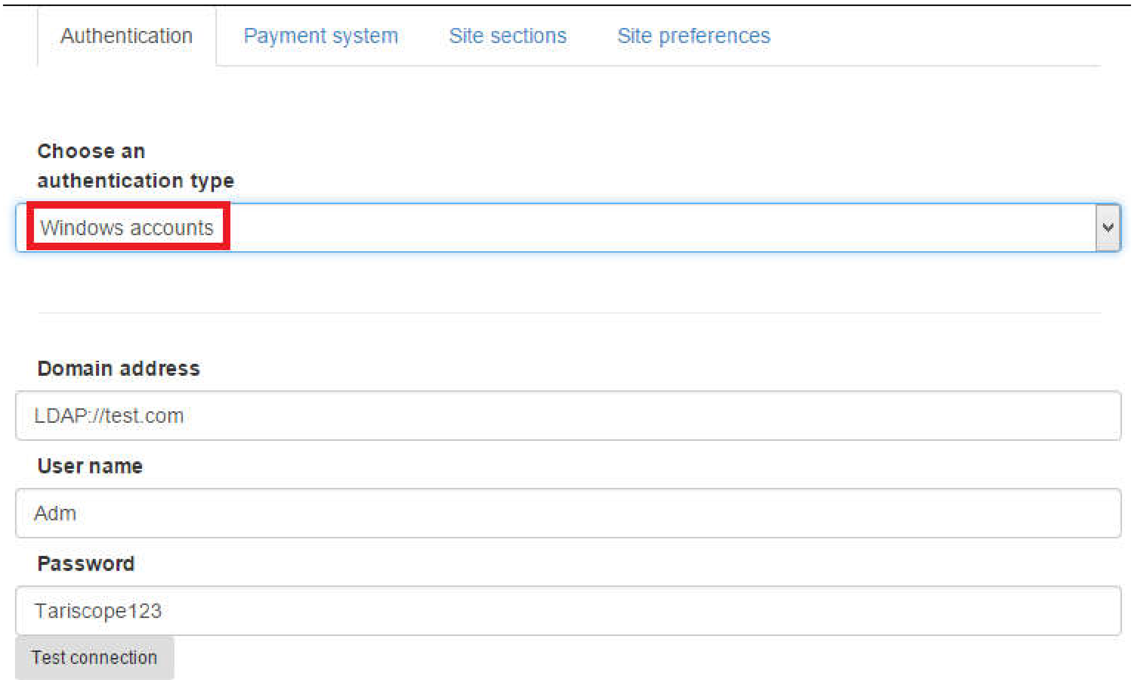


Figure 4.19.1.2

In the **Domain address** box, type an address of the Active Directory server.

In the **User Name** box, type a username which has an access to subscribers' accounts in Active Directory.

In the **Password** box, type a password.

Check the correctness of the data, by clicking on the **Test connection** button.

If you get a connection error, check the settings and re-check the connection. If the parameters have been entered wrong, the Personal Area site will not work, and the WebConfig page of the site will not be available. In this case, the data can be corrected only by editing the Web.config file, located by default: C:\inetpub\tsweb\www\Web.config).

After checking the authentication settings, click **Confirm**. The **Web.config** file will have been generated and a message appears on the Web page as shown in Figure 4.19.1.3.

On this page, click on the **here** link and in the appeared window, save the file. Copy this file instead of the original. By default, the file is located of the following path: C:\inetpub\tsweb\www\Web.config.

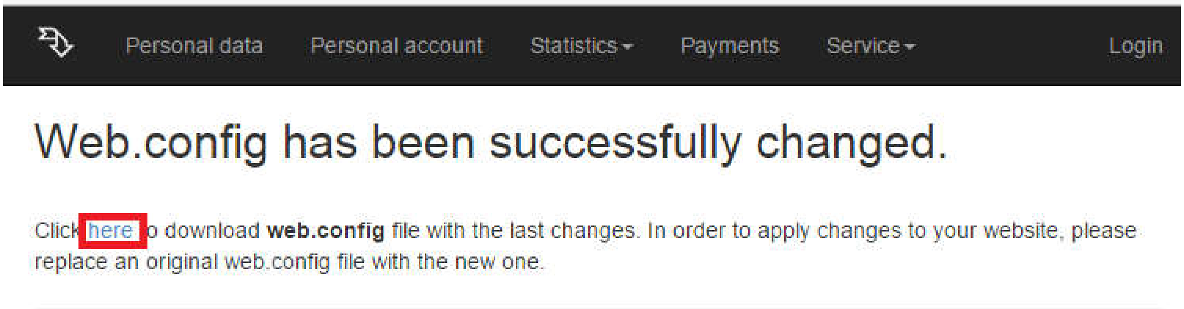


Figure 4.19.1.3

4.19.2. Configuration of the supported payment systems

The **Payment system** tab on the WebConfig page of the Personal Area is relevant only for the Tariscope Provider edition where you can provide the ability for subscribers to perform payments for telecommunications services using the Personal Area.

When you select the tab, the page will be as shown in Figure 4.19.2.1.

The Personal Area allows to use the following payment systems:

- WebMoney,
- PayPal,
- Privat24,
- LiqPay.

To enable or disable all options, turn on or off the **Turn on/off all payment systems** switch.

You can enable or disable a specific payment system.

To view and edit the data of any payment system, click **Show settings** located below the payment system name.

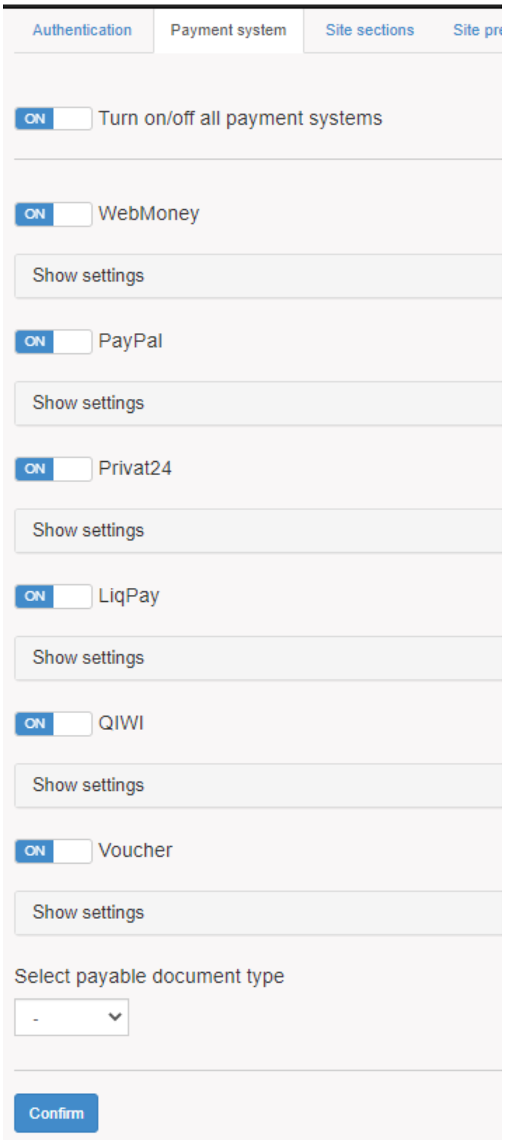


Figure 4.19.2.1

In the **Select payable document type** list, select the desired document type.

4.19.3. Configuration of the site sections

The **Site sections** tab of the WebConfig page allows you to set only those sections of the Personal Area which should be displayed for subscribers.

When you select the tab, the WebConfig page will be as shown in Figure 4.19.3.1.

By default, all sections are selected. Disable those sections, which should not be displayed in the Personal Area.

If you enable the **Dialing code directory** section, from the **Current provider** list, select a name of a provider of dialing codes of which will be displayed in the directory.

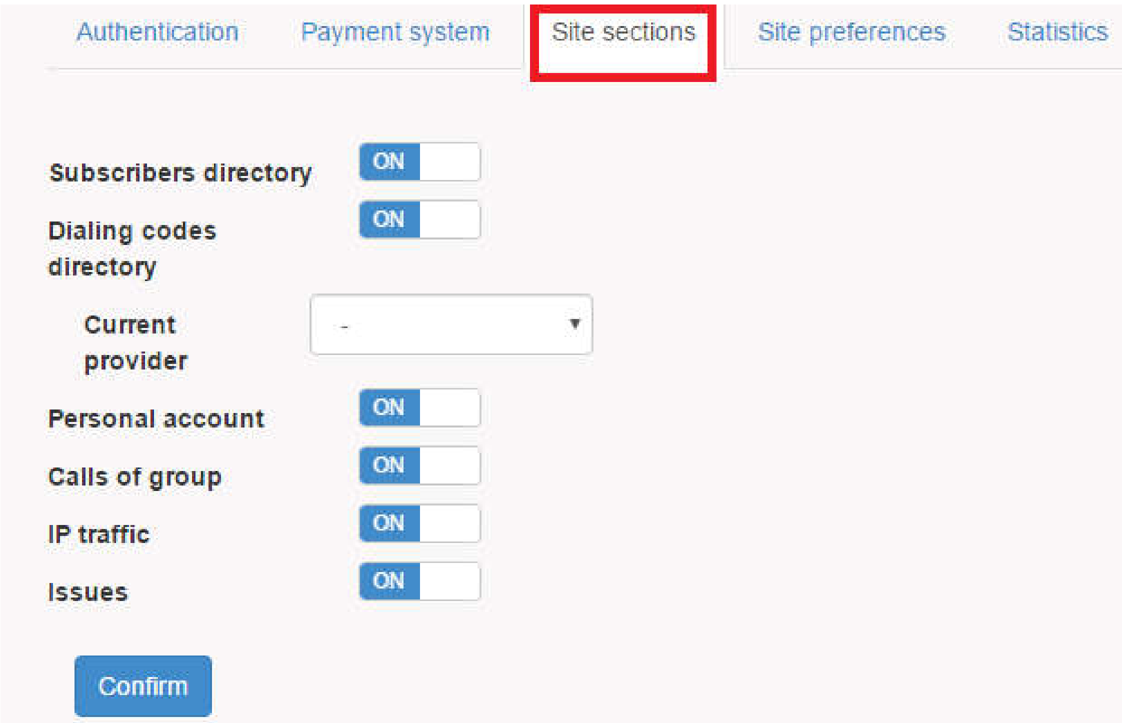


Figure 4.19.3.1

4.19.4. Configuration of the site preferences

The **Site preferences** tab of the WebConfig page provides the ability to change the Tariscope Personal Area name and enables or disables subscribers to edit their profiles.

When you select the tab, the WebConfig page will be as shown in Figure 4.19.4.1.

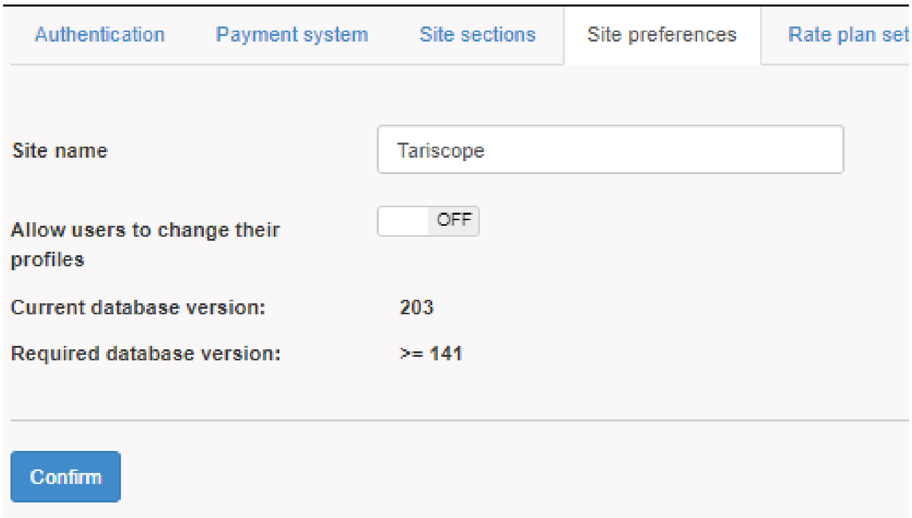


Figure 4.19.4.1

If you wish to change the Tariscope name that is displayed on the Personal Area pages, for example, on your company name, type a new name in the **Site name** box.

To enable subscribers to edit their personal profiles, which are displayed on the Personal data page, enable the **Allow users to change their profiles** box. By default, the box is switched on.

4.19.5. Configuration of rate plan settings

This configuration tab is relevant for users of the Tariscope Provider editions who want allow subscribers to have an ability to change their rate plans.

If you selected the **Rate plan settings** tab, the WebConfig page will be as shown in Figure 4.19.5.

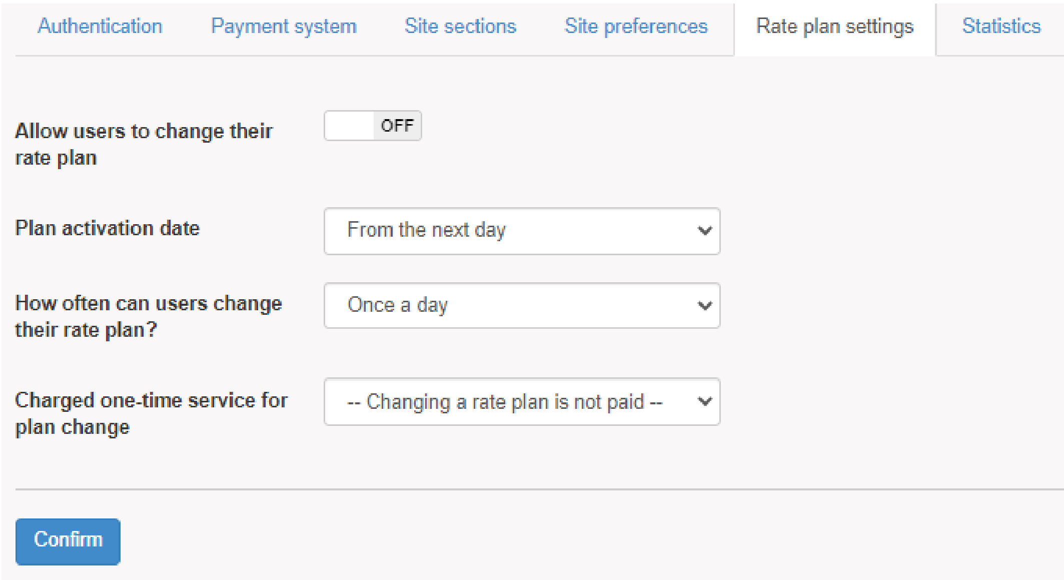


Figure 4.19.5.1

The **Allow users to change their rate plan** switch allows to enable or disable an ability to subscribers to change their rate plans.

In the **Plan activation date** list, select an option which you want. There are following options:

- **From the next day**. A new rate plan will be applied from the next day.
- **From the next week**. A new rate plan will be applied from the next week.
- **From the next month**. A new rate plan will be applied from the next month.

The **How often can user change their rate plan** list allows you to select the period when a subscriber can change his rate plan again. There are the following options:

- **Not limited.**
- **Once a day.**
- **Once a week.**
- **Once a month.**

Select the desired option.

If you want to take fee for the rate plan change, you should create one-time service in Tariscope and select it in the **Changed one-time service for plan change** list.

4.19.6. Configuration of statistics parameters

The Tariscope Personal Area provides the ability for subscribers to set a category for their calls. This is useful for customers of the Tariscope Enterprise edition.

The **Statistics** tab of the WebConfig page allows you to set a list of call categories, which subscribers can set for calls.

When you select the tab, the WebConfig page will be as shown in Figure 4.19.6.1.

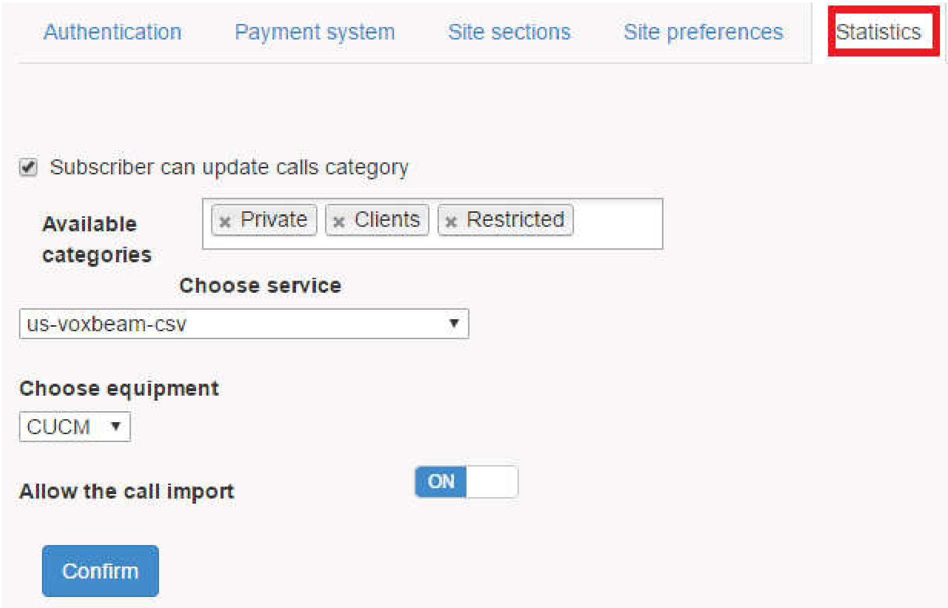


Figure 4.19.6.1

To enable subscribers to set categories for their calls, check the **Subscriber can update calls category** check box, and select the list of the allowed categories from the **Available categories** list.

If you want to enable the call import to Tariscope, select **ON** in the **Allow the call import** switch. Then in the **Choose equipment** list, select a desired telephone system and, in the **Choose service** list, select a desired service.

4.20 Dashboard configuration

Tariscope contains a dashboard that allows you to monitor current information about calls, services, subscribers, and others. Now the Tariscope dashboard includes 22 widget types that allows you to create hundreds different widgets. You can choose any combination of the widgets for your dashboard.

The dashboard is the first page that appears after you log in. An example of the page is shown in Figure 4.20.1.

The default dashboard contains only one widget. This is **Information about Tariscope** that displays the valid date, support date, Tariscope version, and version that is available on the Tariscope site. You cannot change or delete this widget.

You can open the dashboard at any moment if you click on the **Dashboard** item of the menu.

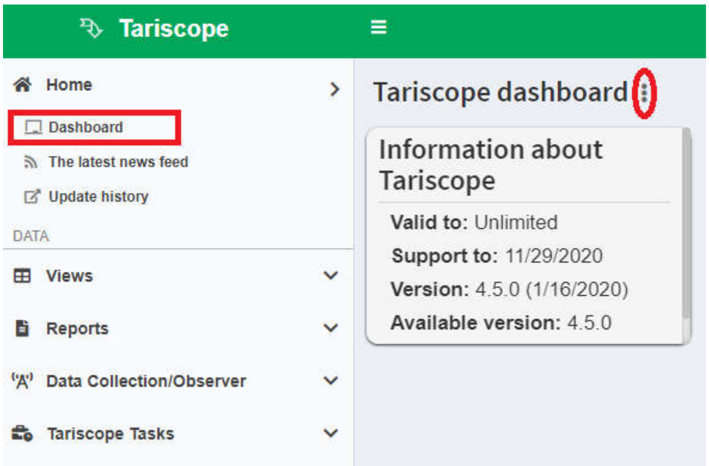


Figure 4.20.1

To do any actions with the dashboard, click on the sign of three dots after the **Tariscope dashboard** title. The menu appears that contains the following items:

- **Add widget**. Allows you to add a new widget to the dashboard.
- **Settings**. Allows you to configure the dashboard settings.
- **Widget access**. Allows you to set access to widgets for users.
- **Refresh all widgets**. Allows to refresh the widgets.
- **Go full screen**. Allows you to expand the dashboard on the full screen.

4.20.1 Adding a widget

Open the menu as it is described above and click on the **Add widget** item. The page will be as shown in Figure 4.20.2.

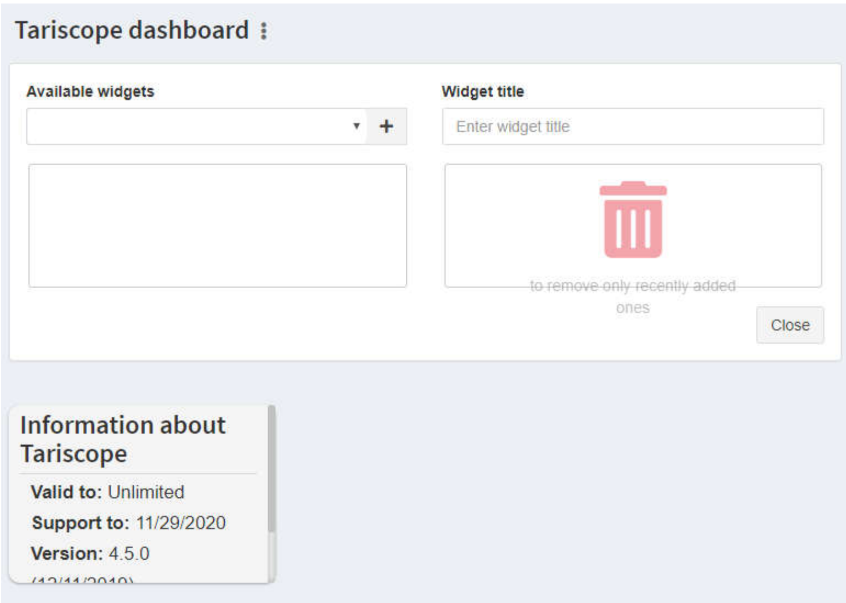


Figure 4.20.2

Open the **Available widgets** list. It contains the following items:

- **3CX – active calls**. The widget is relevant only for 3CX users. It displays the number of current active calls and number of maximum available simultaneous calls according to 3CX license.
- **Abnormal subscribers**. The widget displays statistics on subscribers whose services are abnormal according to the Tariscope Payment Forecast service. If you do not use this service, it makes no sense to use the widget.
- **Balance statistics**. This widget can be applied by telecom service provides who use the Tariscope Provider edition. It displays the beginning balance for the current month, sum of charged services on the current day, sum of payments from customers for the current month, and current day balance.
- **Call statistics**. It is a graph of call traffic. The Tariscope administrator can configure a graph period, traffic type (from a communication node, PBX, department, or subscriber), call direction (all directions, incoming, outgoing, internal, or transit). It is possible to simultaneously display data on two elements of the same type.
- **Current date and time**. Displays the current date and time.
- **Current version of Tariscope**. Displays the latest version number of Tariscope, which is available on the Tariscope site, and version number of Tariscope that you use.
- **Database information**. It displays the server name, database size, log file size, and Tariscope database version.
- **Database size**. If you use Microsoft SQL Server Express edition, it has a restriction on the database size. In this case the widget is useful to control the database size. It displays the percentage of available database volume.
- **Latest news article**. Displays an announce of the latest article on the Tariscope site.
- **License usage.** The widget displays the percentage of the Tariscope license usage.
- **Missed call statistics.** The widget displays statistics on the missed calls.
- **Notes**. The widget allows you to create notes that will be displayed on the dashboard.
- **Observers status**. The widget displays statuses of the Tariscope Observer services.
- **Request to database**. The widget allows you to create a query to the Tariscope database to get any data and display them in the widget using HTML tags.
- **Resource usage**. The widget displays a usage of the server resources by Tariscope.
- **Tariscope task status**. Displays a task list of Tariscope Tasks for today and yesterday. The list contains a task name, time when task must be executed, and execution status.

In the **Available widgets** list, select the desired widget. It appears in the box below as it is shown in Figure x.3.

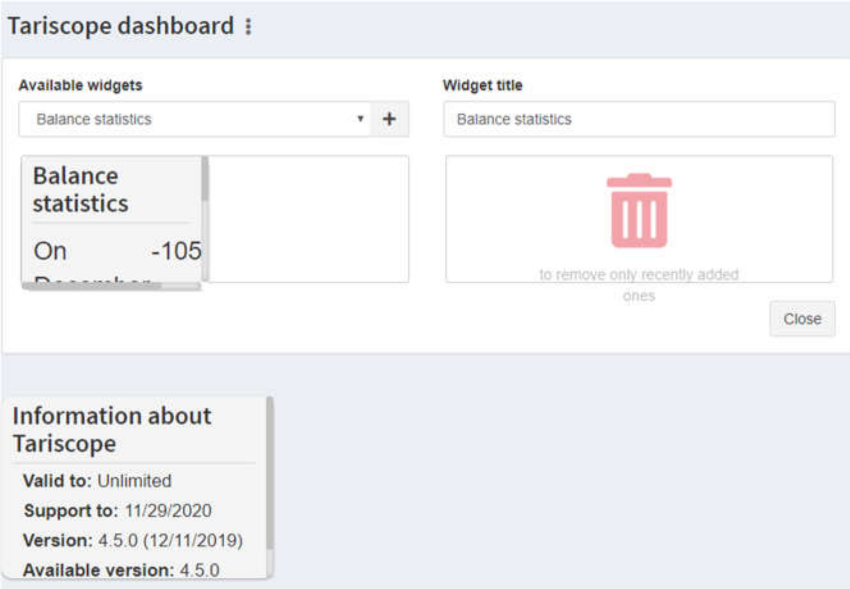


Figure x.3

Select the widget and drag and drop it on the dashboard. The page will be as shown in Figure x.4.

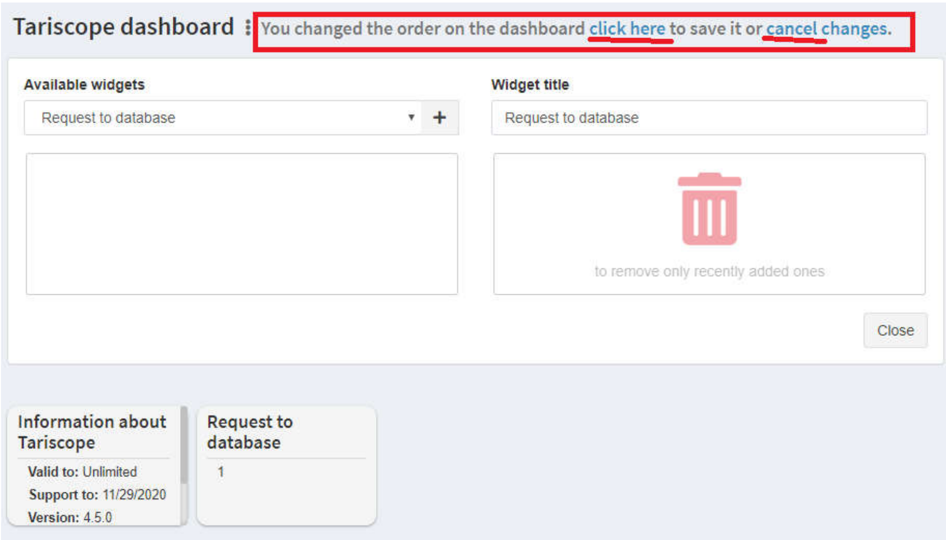


Figure x.4

To save these changes on the dashboard, click on the **click here** link. To cancel the changes, click on the **cancel changes** link. To close widgets selection, click on the **Close** button.

Let us consider widget types in more detail.

3CX active calls

The widget is intended to 3CX users who wish to monitor information about active calls. There are two views of the widget: the detailed view and simplified one. The examples of these views are shown in Figure x.5 and x.6.

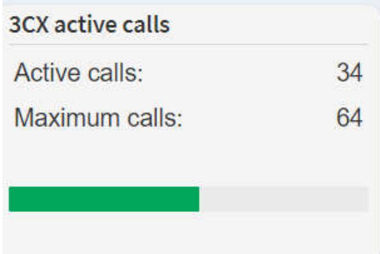


Figure x.5

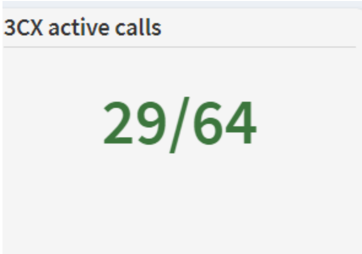


Figure x.6

The widget shows a number of the current active calls in 3CX Phone System and number of maximum calls that can be made.

Before you will configure the widget, you should configure Tariscope to monitor active calls.

To set up settings of the widget, double click on it and in the appeared menu, select the **Configuration** item. The **Widget configuration** window appears as shown in Figure x.7.

In the **Equipment ID** text box, enter an identifier (ID) of the 3CX Phone System in the Tariscope system. You can find it on the **Equipment** page. To go to this page, select in the menu: **Communication nodes** → your node → **Equipment** → **Equipment management**.

In the **Widget type** list, select the desired type of the widget. There are two options:

- **Detailed.**
- **Simplified**.

Click on the **Save** button to keep settings.

Figure x.7

Balance statistics

The widget can be applied by telecom service providers. It allows you to monitor the value of services provided and money that customers paid for these services in the current month.

An example of the **Balance statistics** widget is shown in Figure x.8.

Figure x.8

Call statistics

The widget allows you to monitor calls traffic intensity. An example of the widget after adding it on dashboard is shown in Figure x.9.

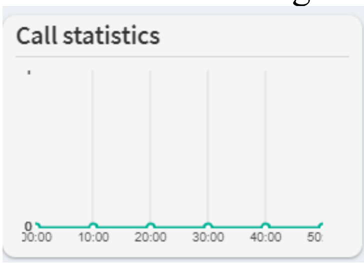


Figure x.9

You should specify the widget settings. Before doing this, determine for which object you want to calculate the traffic: a specific communication node, PBX, group of subscribers, or subscriber. Find ID of the required object in Tariscope.

To specify the widget settings, double click on the widget, the menu appears as shown in Figure x.10. Select the **Configuration** item. The **Widget configuration** window appears as shown in Figure x.11.

In the **Period** list, select the desired period. There are the following options:

- **Last hour.**
- **Last 6 hours.**
- **Last 12 hours.**
- **Today.**
- **Yesterday.**
- **This week.**
- **Last week**.

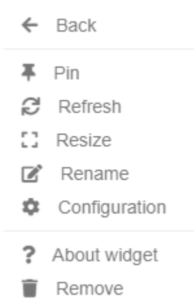


Figure x.10

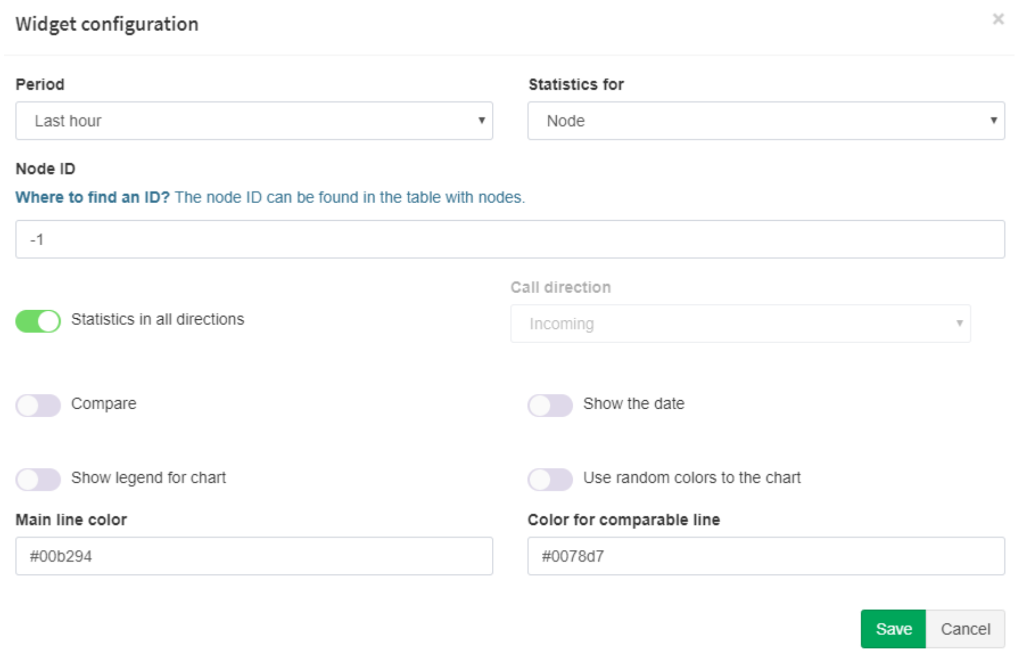


Figure x.11

In the **Statistics for** list, select an item for which you wish to get the statistics. There are the following options:

- **Node.**
- **Equipment.**
- **Group.**
- **Subscriber**.

Depend on what object you selected in the **Statistics for** list, the title of the next box can be changed. For instance, if you have selected '*Subscriber*', the next box title will be *'Subscriber ID'*, and so on.

Enter an identifier (ID) of the selected object in this box.

The **Statistics on all directions** switch allows you to select a call direction. By default, the switch is on. This means that the widget will contain data on incoming, outgoing, internal, and transit calls. If you want to monitor only the specific call direction, turn off the switch and in the **Call direction** list, select the required call direction.

The **Compare** switch allows you to display traffic of one or two objects. By default, the switch is off. This means only traffic of one object will be display. To display traffics of two objects, turn on the switch. The **ID of** object appears, where you should specify an identifier (ID) of the object.

To show the date on the widget, turn on the **Show the date** switch. By default, it is off.

If you wish to show the legend, turn on the **Show legend for chart** switch.

You can use a special color to display the chat. To specify the color of the main chat, enter the color code in the **Main line color** text box. If you use two chat in the widget, to specify the color of the second chat, enter the color code in the **Color for comparable line** text box.

To save settings, click on the **Save** button.

Current date and time

The widget displays the current date, time or date and time. An example of the widget is shown in Figure x.12.

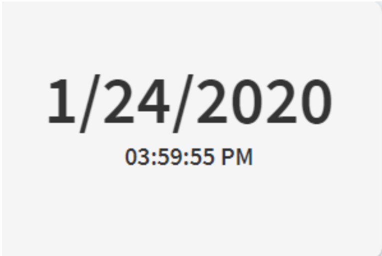


Figure x.12

To configure the widget settings, double-click on the widget and in the appeared menu, select the **Configuration** item. The **Widget configuration** window appears as shown in Figure x.13.

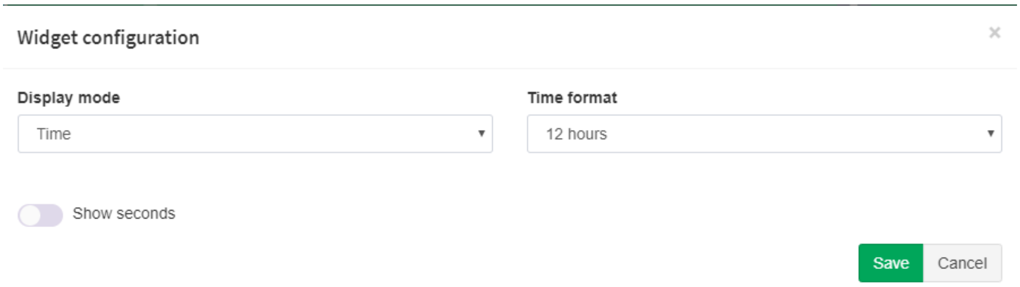


Figure x.13

In the **Display mode** list, select the desired item. The list contains the following items:

- **Time.**
- **Date.**
- **Date and time**.

In the **Time format** list, select the desired time format:

- **12 hours.**
- **24 hours**.

Click the **Save** button to keep the widget settings.

Current version of Tariscope

This widget displays the latest version number of Tariscope, which is available on the Tariscope site, and version number of Tariscope that you use. An example of the widget when the used Tariscope version is equal to the version on the Tariscope site is shown in Figure x.14.

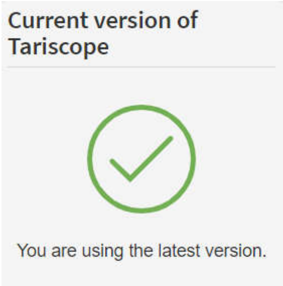


Figure x.14

Database information

The widget displays the server name, database size, log file size, and Tariscope database version. An example of the widget is shown in Figure x.15.

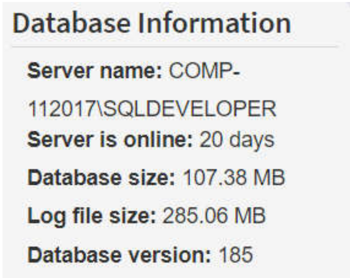


Figure x.15

Database size

The widget is relevant if you use Microsoft SQL Server Express edition, that has a restriction on the database size. The widget is useful to control the database size. It displays the percentage of available database volume if you use Microsoft SQL Server Express edition. For other Microsoft SQL Server editions it writes that there are no limits on the database size as it is shown in Figure x.16.

Figure x.16

If you use other Microsoft SQL Server editions than Express edition and want to control the database size, use the Database Information widget.

Latest news article

The widget displays an announce of the latest article on the Tariscope site. An example of the widget is shown in Figure x.17.

Figure x.17

Click on the 'more' link to go to the article.

License usage

The widget displays the percentage of the Tariscope license usage. As you know there are two Tariscope editions: Tariscope Enterprise and Tariscope Provider. The Tariscope Enterprise license specify the number of subscribers that Tariscope processes. The Tariscope Provider license specify the number of extensions, IP addresses or subscriber without extensions and IP addresses that Tariscope processes. The **License usage** widget displays the maximum value on the license and value that you used. An example of the widget is shown in Figure x.18.

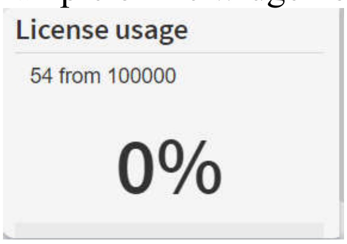


Figure x.18

Missed calls statistics

The widget displays statistics on the missed calls. An example of the widget when there is no data on the missed calls is shown in Figure x.19. You can configure the widget. To do this, double-click on the widget. In the appeared menu, select the **Configuration** item. The **Widget configuration** windows appears as shown in Figure x.20.

In the **Period** list select the desired period. There are the following options:

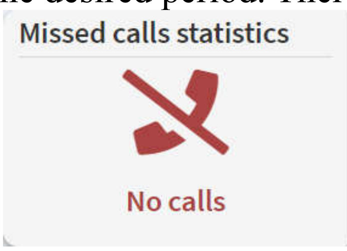


Figure x.19

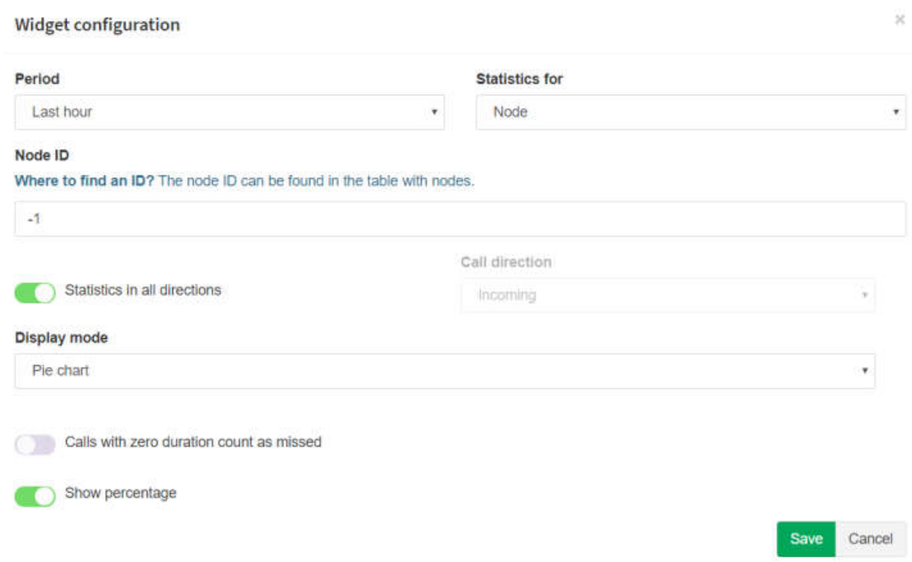


Figure x.20

- **Last hour**.
- **Last 6 hours**.
- **Last 12 hours**.
- **Today**.
- **Yesterday**.
- **This week**.
- **Previous week**.

In the **Statistics for** list, select an object for which you want to create the widget. As an object you can select:

- **Node**. This means you will get the statistics for the desired communication node.
- **Equipment**. This means you will get the statistics for the desired telephone system.
- **Group**. This means you will get the statistics for the desired group of subscribers.
- **Subscriber**. This means you will get the statistics for the selected subscriber.

To specify the desired object, enter its ID in the **Object ID** box. The word of 'Object' will be changed on Node, Equipment, Group, or Subscriber depending on previous choice.

If you need, you can select a call direction. By default, the widget displays information for all call directions. To choose the specific direction, turn off the **Statistics on all directions** switch and in the **Call direction** list, select the desired direction. There are the following options:

- **Incoming.**
- **Outgoing.**
- **Internal.**
- **Transit.**
- **Unknown**.

You can select the data display mode. To do this, in the **Display mode** list, select the required option from the following options:

- **Pie chart**. The mode displays the chart that contains answered and missed calls. An example on the char is shown in Figure x.21.
- **Text mode**. The mode displays text information about answered and missed calls. An example on the char is shown in Figure x.22.
- **Only answered**. The widget displays information only about the answered calls. An example on the char is shown in Figure x.23.
- **Only missed**. The widget displays information only about the missed calls. An example on the char is shown in Figure x.24.

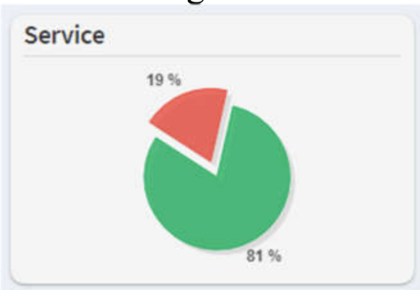


Figure x.21

Figure x.22

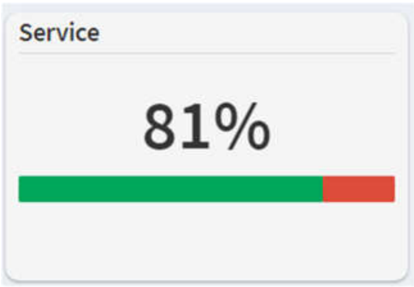


Figure x.23

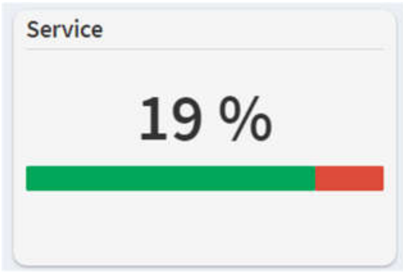


Figure x.24

Missed calls are considered to be those that have an unanswered feature in Tariscope. If you want to consider the missed calls that have zero duration, turn on the **Calls with zero duration are counted as missed** switch.

By default, the widget displays data as a percentage. To display the data as a value, turn off the **Show percentage** switch.

Click on the **Save** button to save settings.

Figure x.25 shows the use of the **Missed calls statistics** widget for different departments.

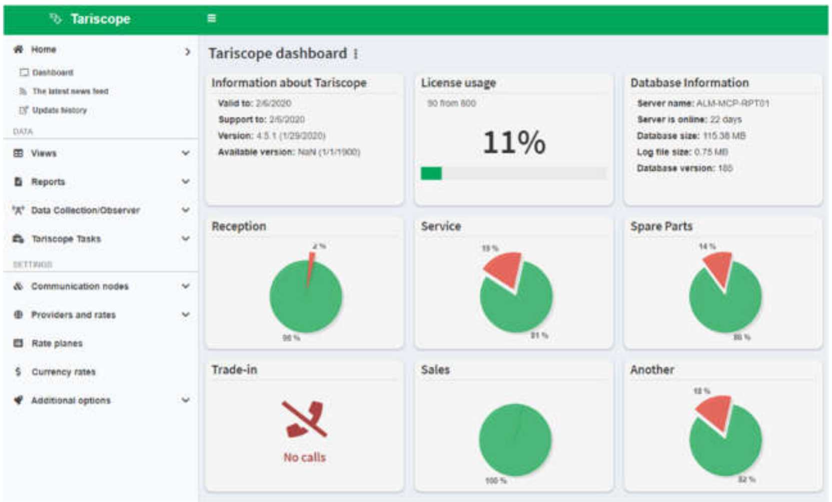


Figure x.25

Notes

The widget allows you to display some notes. For example, you can create a list of tasks that you should do in Tariscope. An example of the widget is shown in Figure x.26.

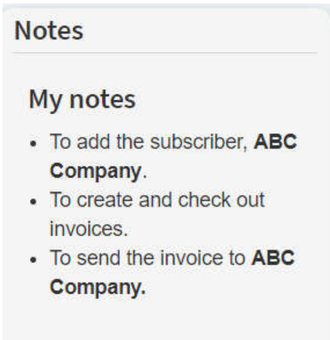


Figure x.26

To create notes, double-click on the widget. In the appeared menu, select the **Configuration** item. The **Widget configuration** window appears. The window allows you to enter your notes using HTML. An example of the windows is shown in Figure x.27.

After you entered your notes, click on the **Save** button to keep text.

Figure x.27

Observers status

The widget allows you to monitor the statuses of the Tariscope Observers services. It displays a name of Observer, status of the service (Not installed, Running, Stopped), and the time when the Observer processed the latest call. An example of the widget is shown in Figure x.28.

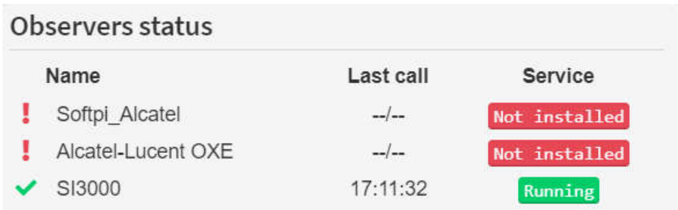


Figure x.28

The widget has two settings. Double-click on the widget and in the appeared menu, select the **Configuration** item. The window appears as shown in Figure x.29.

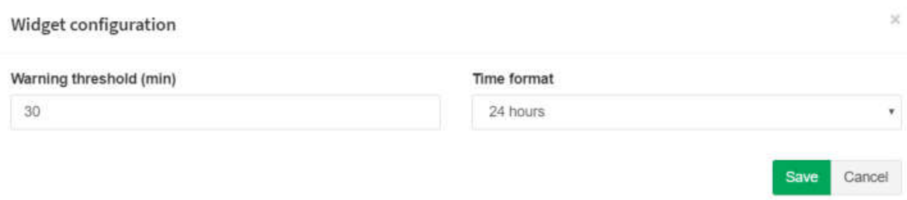


Figure x.29

The value in the **Warning threshold (min)** box allows you to specify the time period that if there are no new calls during the period you will get the warning. A warning sign is a red exclamation mark before the Observer name.

The **Time format** list provides the choice of time format: 24 hours or 12 hours.

Click on the **Save** button to keep the settings.

Request to database

The widget allows you to create a query to the Tariscope database to get any data and display them in the widget using HTML tags.

If you have selected the widget, it appears as shown in Figure x.30.

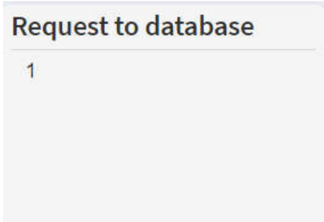


Figure x.30

At first, you should decide what information from the Tariscope database you want to display. Then you should define how to get these data. There is a document "Tariscope 4.x. Database scheme" that contains the descriptions of all Tariscope tables and views. Find tables or views that contain the required data and create the SQL query. You can check out the correctness of the query using Tariscope. To do this, in the menu, select **Additional options → SQL queries,** enter and execute the query.

If you get the required result, enter the query in the widget. To do this, double-click on the widget and select the **Configuration** item. The **Widget configuration** window appears as shown in Figure x.31.

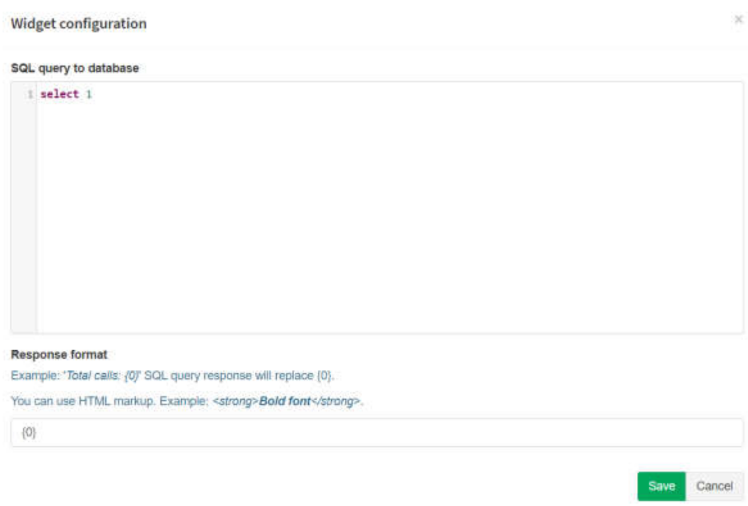


Figure x.31

Enter the query in the **SQL query to database** box. In the **Response format** box, enter information that will display in the widget. You can use HTML to display data. For example, you can enter the following string to display the result of query contained calls cost for current date:

Total calls cost: {0},

where {0} is a result of the query.

Click on the **Save** button to keep the settings.

The widget allows you to create hundreds of different widgets.

Resource usage

The widget displays a usage of the server resources by Tariscope. An example of the widget is shown in Figure x.32.

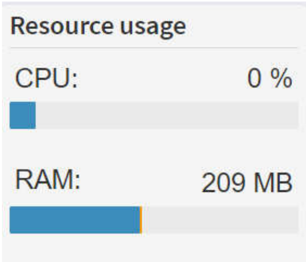


Figure x.32

Blue color shows the resource usage by other applications. Yellow color shows the resource usage by Tariscope applications. It is possible to show only the resource usage by Tariscope applications. To do this, double-click on the widget. In the appeared menu, select the **Configuration** item. The **Widget configuration** window appears as shown in Figure x.33.

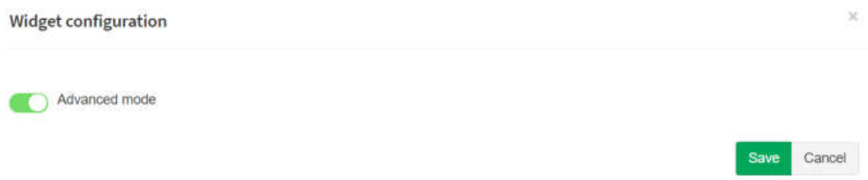


Figure x.33

The window contains only the **Advanced mode** switch, which is enabled by default. Turn off the switch to show only the resource usage by Tariscope applications.

Tariscope Task status

The widget displays a task list of Tariscope Tasks for today and yesterday. The list contains a task name, time when task must be executed, and execution status. Tariscope Task is a Windows service that executes different tasks by schedule. Therefore, the widget is relevant if you use Tariscope Tasks. An example of the widget is shown in Figure x.34.

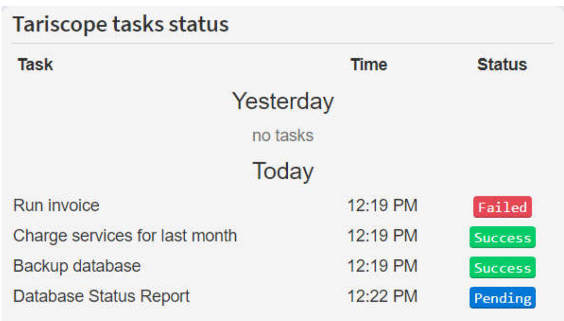


Figure x.34

Dashboard settings

The Tariscope dashboard has some settings. To configure the dashboard, click on the sign of three dots after the **Tariscope dashboard** title. In the appeared menu, select the **Settings** item. The window appears that is shown in Figure x.35.

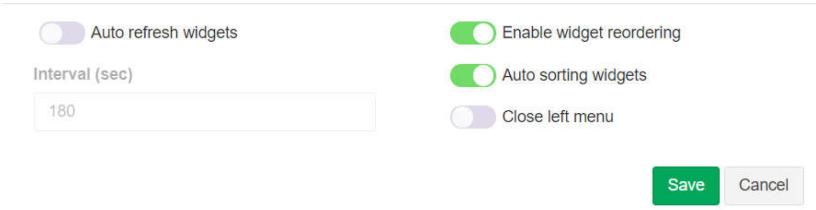


Figure x.35

The **Auto refresh widgets** switch enables or disables automatic refresh of widgets content. By default, the switch is off. Most widgets contain data that are changed over time, therefore, to see actual data, turn on the switch and specify the period of data change in the **Interval** box.

The **Enable widget reordering** switch allows you to enable or disable the widget rearrangement.

The **Auto sorting widgets** switch allows or disallows you to leave an empty space on the dashboard.

If you want to have more space for the dashboard, turn on the **Close left menu** switch.

Click on the **Save** button, to keep the settings.

Widget access

When you create a Tariscope user, you can give access rights to the dashboard for the user. The configuration of widget access allows to restrict number of widgets that users can see. Click on the sign of three dots after the **Tariscope dashboard** title. In the appeared menu, select the **Widget access** item. The window appears as shown in Figure x.36.

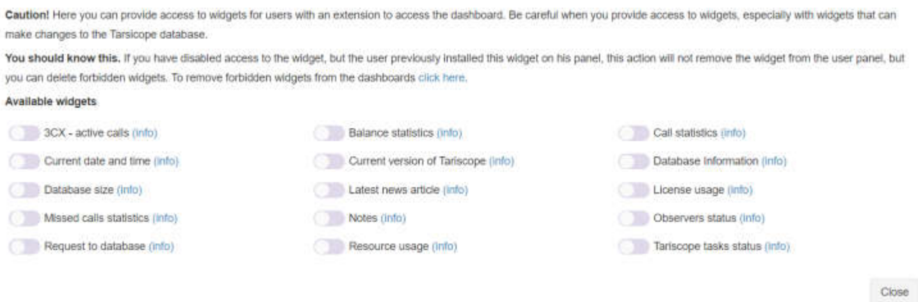


Figure x.36

By default, all widgets disable. Enable the widgets that can be visible for users.

Refresh all widgets

If you want to refresh all widgets, click on the sign of three dots after the **Tariscope dashboard** title and in the appeared menu, select the **Refresh all widgets** item.

Go full screen

If you wish to extend the dashboard to full screen, click on the sign of three dots after the **Tariscope dashboard** title and in the appeared menu, select the **Go full screen** item.

Specific actions for a widget

There some specific actions that you apply to each widget. Double-click on the desired widget. The menu appears as shown in Figure x.37.

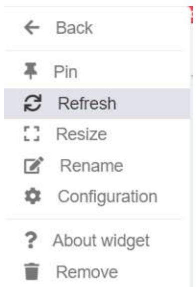


Figure x.37

The **Back** item of the menu allows you to close the menu.

If you want to pin the widget position, select the **Pin** item. If you want to unpin the widget from the specific position, select the **Pin** item again.

If you need to refresh the widget content, select the **Refresh** item.

A widget can have a different size. To change the widget size, select the **Resize** item and in the appeared window, select the desired size of the widget.

If you want to rename the widget, select the **Rename** item of the menu.

Some widgets have settings. To change these settings, select the **Configuration** item of the menu.

If you want to understand the widget purpose, select the **About widget** item.

To remove the widget from the dashboard, select the **Remove** item.